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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)

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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	per:	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 [.]	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 ± 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 ge ge Boarded aided: persons ge ge	

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
 .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 .2 The stability of boarding may be a two persons each lifejackets should boar should then be demo 	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:	/ 5.10 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 the when it has been ment material has been 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		Regulations: L	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:		Surveyor:	Time:	
4.1.26 Drop test		Regulations: 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 by into the water. The	The liferaft should sustain no damage,			

	Manufacturer: Model:		Date: Surveyor:		Time:
Inflatable liferafts	Lot/Serial Number:		Organizatio	on:	
4.1.27 Davit-launch	ed liferaft boarding test		Regulations: LS	A Code; MSC.8	31(70) 1/5.16.4
Test Pi	Test Procedure		Acceptance 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 t mass 82.5 kg. There distortion of the liferaft. be released and the life It should then be lower 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 liferaft	. 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:		Date: Time: Surveyor: Organization:		
44.20 Douit Jourse			• <u> </u>		
	d inflatable liferafts – Strength test Test Procedure			e; MSC.81(70) 1/5.17.10 Significant Test Data	
		Acceptance Criteria		e e e e e e e e e e e e e e e e e e e	
It should be demonstrated by an overload test on the liferaft hanging from its centre support that the bridle system has an adequate factor of safety as follows:			should remain	temperature: °C	
.1 the liferaft should be placed in a temperature of 20±3°C for a period of at least 6 h;				time in temperature: h	
O fallouine this name	l af ann diùinn inn dha lifenaft al andal ha			number of persons:	
.2 following this period of conditioning, the liferaft should be suspended from its lifting hook or bridle and the buoyancy chambers (not including an inflatable floor) inflated;				load: kg	
3 when fully inflated	and when the relief valves have re-			time suspended: min	
.3 when fully inflated and when the relief valves have re- seated themselves, all relief valves should be made inoperative;				pressure before loading:	
				pressure suspended/loaded:	
.4 the liferaft should then be lowered and loaded with a distributed mass equivalent to four times the mass of the number of persons for which it is to be approved and its equipment, the mass of each person being taken as 82.5 kg;				pressure after test after unloading:	
				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, the 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 abrasion test			Regulati	ions: LSA Code; MSC	/Circ.809 Annex3; MSC.81(70) 1/5.17.12
	rocedure	Acceptance Criteria		Significant Test Data	
The inflatable liferaft should be loaded with a		During the test and after its completion, the liferaft should		Number of persons	
		not sustain damage or distortion, or assume a position, which			
	ne number of persons for			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				
valves operative. A lifer				Comments/Observations	
	m in continuous contact				Comments/Observations
against a structure erected to represent the side					
of a ship having a 20° adverse list.					
	t from which the hook is				
	comparable to that of a				
shipboard launching app	pliance				
					Passed: Failed:

	Manufacturer:			Date:	Tin	1e:		
Model:				Surveyor:				
				Organization:				
			T					
	est (self-righting lifera			ions: MSC/Circ.809 Ar				
Test Pro		Acceptan				Significant Tes		
		After release the liferaft shou		natically return to the			ght position fro	om the
the liferaft about a lo		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 of		complete righting should oc	cur withir	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 ar	nd including 180° and				Comments/C	Observations		
should be released.								
					Righting active	on:		
					Passed:	Failed:		
					Righting active Passed:	on: Failed:		

Manufacturer:				Date:	Time:
Inflatable liferafts	Lot/Serial Number:			Organization:	
4.1.32 Submergence	e test (self-righting liferafts on	llv)	Regulat	ions: MSC/Circ.809 Au	nnex3; MSC.81(70) 1/5.19
Test	Procedure	Accer	otance Cri	teria	Significant Test Data
	acked condition, should be	The liferaft should float	to the su	Irface 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 liferaft or liferafts in the packed condition with the					Passed: Failed:
entrance so arranged that it will be open on inflation,					
but without the container, 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 An	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 sigi	n of damage affecting	Wind	d velocity measured:	_m/s
whenever practicable,	the liferaft or liferafts	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	ments/Observations	
On completion of the there should be no de support or canopy from tube or other dama efficient function of the l Then the liferaft or lifera to the above-mentione	tachment of the arch the upper buoyancy ge which affects the iferaft. fts should be exposed						
minutes in each of the feature	ollowing conditions:						
.1 with the entrance to the other closed, it one entrance;	o the wind open and f there is more than				1	Passed: Failed:	
	es open, if there is				2	Passed: Failed:	
more than one entr	ance; and				3	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	ice 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: Model: Lot/Serial Number:		Surveyor:	Time:	
4.1.35 Seam stre	ength 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 Stre		.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	0 mm 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	 .2 Weld strength 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; 	Comments/Observations	
.1 Samples of all be tested. .2 Seam construct should be teste .3 The test specir	ble specification for sewn canopy types of sewing used in production to ctions 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: 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:	
		 .1 Store the test specimens for 12 weeks over water in a closed container at 93°C ± 2°C. .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. 	
		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 ± 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**

EVALUATION AND TEST REPORT

- 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**

EVALUATION AND TEST REPORT

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.	ing 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			
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		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				
keep records of any Administration's ins	production tests carried out in accordance with the tructions.	Description of System:			
		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
 highly visible colo 				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:
Kight metalts Lot/Serial Number: 4.2.4 Drop test Regeneration Test Procedure Acceptance (Overload test) Damage to the container or valise Each type of liferaft should be subjected to a minimum of two drop tests. Where the liferaft in its operational condition is packed in a container or valise, one such test should be carried out with the liferaft packed in each type of container or valise in which the manufacturer proposes to mark it. Damage to the container or valise		Organization: Regulations: LSA Code Acceptance Criteria	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 of Floating position:
condition, should dropped from a hei If it is to be stowed 18 m, it should be at which it is to be the painter should be suspension so that drops, thus simulat The liferaft should permit thorough ins contents of the en	the operational packed be suspended and then ght of 18 m into the water. d at a height greater than dropped from the height stowed. The free end of be attached to the point of a it pays out as the liferaft ting actual conditions. be left floating for 30 min. be lifted from the water to spection of the liferaft, the quipment container and, he container or valise.	 not leak. However, for drop tests from heights exceedin m, leakage from up to 5% of the receptacles may accepted provided that: .1 the equipment list for the liferaft specifies the carriage 5% excess water or means of desalination adequ to produce an equivalent amount; or .2 the water receptacles are contained in a waterpr overwrap. *If any additional equipment was placed in the liferaft for test, e.g. SART, state type and condition of the equipmafter the test. 	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	Re	egulations: LSA Code IV/4	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	ge.	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	A Code IV/4.	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:		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 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
 .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. .2 The stability of the liferaft during boarding may be ascertained as follows: 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. 	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 T	est Data
		The liferaft when fully swamped, should be ca supporting its full equipment and the number of		Loaded liferaft swamped	
	I equipment and the	for which it is to be approved.		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	g	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	Model:		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 inspectior	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	 .1 Interior not to cause discomfort to occupants: .2 At least one viewing port:

Rigid liferafts	Model:	Surveyor:	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 ± 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	Regulations: LSA Code; MSC.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 time 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 the						
				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	e:	
Rigid liferafts	Model:			Surveyor:			
Rigiu merans	Lot/Serial Number:			Organization:			
4.2.23 Self-right	ing test (self-righting lif	erafts only)	Regulation	ns: LSA Code 4.3.5	.1: MSC.81(70) 1	//5.18	
V	Procedure		nce Criteria			ignificant Test Data	
		After release the liferaft should automatically return to th upright position without assistance. Righting action shoul			The liferaft returned to upright position from the		
		be positive and continuous.	0	5	+ 10°	- 10°	
release it. The lif	feraft should be fully				+ 20°	- 20°	
	o one on board, with				+ 30°	- 30°	
	nings 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/Obse	rvations	
					Passed: F	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	
beaulon loice 6.					Comments/Observations Passed: Failed:	

	Manufacturer:	· · · · · · · · · · · · · · · · · · ·	Date:		
Rigid liferafts	Model:		Surveyor:		
	Lot/Serial Number:		Organization:		
4.2.25 Wind vel	ocity test	Regu	ations: LSA Code; MS	C.81(70) 1/5.20	
Test	Procedure			0:	cant Test Data
liferafts require at least: one liferaft from a range of 6 to 25 persons capacity provided the material construction		detachment of the arch support or canopy from the upper			ons
arrangements are similar; and each liferaft greater than 25 persons capacity, except in the case where it can be shown that the material and construction arrangements deem this unnecessary: to be tested under the conditions of wind velocity given in the following paragraphs.			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	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:		
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	ance to the wind closed entrances open, if there			Comments/Observations	
	one entrance; and			Passed: Failed:	

	Manufacturer:				Time:	
Rigid liferafts				Surveyor:		
	Lot/Serial Number:			Organization:		
4.2.26 Self drain	ning test (self-righting li	ferafts only)	Regulatio	ns: MSC.81(70) 1/5.	.21	
	Procedure		nce Criteria	· · · ·	Significant Test Data	
Water should be pu	Imped into the interior of	After the water has been s	hut off and I	has drained, there	Hose delivery rate: I/min	
		should be no appreciable acc	umulation of	water in the liferaft.		
2300 I per minute f	or 1 min.				Area of liferaft: m ²	
					Area of drainage point: m ²	
	ed into separate areas,					
	means, each such area				Draining area sufficient to remove water:	
should be subjecte	d to the test.				YES/NO:	
					Comments/Observations	
					Passed: Failed:	
4007 Juberenti	· Duavant Matarial		Desulation	no. I CA Codo 4 2 C	A. MOC 94/70\ 4/C 2 2	
	y Buoyant Material Procedure	Accenta	nce Criteria	ns: LSA Code 4.3.2	2.1; MSC.81(70) 1/6.2.2 Significant Test Data	
	ne rigid liferaft should be	Acceptal	ice chiena		Significant Test Data	
	loyant material tested				Comments/Observations	
	sts in form 4.3.3 except					
the tensile strength						
					Passed: Failed:	

4.3 COMPONENTS FOR SURVIVAL CRAFT

- 4.3.3 LIFEBOAT BUOYANT MATERIAL
- 4.3.1 HYDROSTATIC RELEASE UNITS

EVALUATION AND TEST REPORT

- 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

EVALUATION AND TEST REPORT

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

Hydrostatic release units		Manufacturer: _ Model: Lot/Serial Numb	per:	Date: Time: Surveyor: Organization:			
4.3.1.1 Submitted dra			cuments			1	
Submitted drawings an						Status	
Drawing No.	Revision No. & date Title of drawing					Status	
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	Hydrostatic release units Manufacturer: Model: Lot/Serial Number:		Surveyor:			
4.3.1.2 Quality assurance		Regulations: MSC.81(70) 2/1.1, 1.2				
Except where all appliances of a the International Convention amended or the International inspected, representatives of	the Administration should make random	f 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:	er: umber:		Date: Time: Surveyor: Organization:	
4.3.1.3 Visual and dimensio	nal examina	tion	Regulations: LS	A Code IV/4.	1.6.3; MSC.81(70) 1/11.1
Test Procedure		Acceptanc			Significant Test Data
		The units should be examined and must conformanufacturer's drawings and specifications. Each hydrostatic release unit should undergo all the technical tests shown in forms 4.3.1.4 to 4.3.1.10 should be renewed or repaired between the tests. should be conducted in the sequence of the forms.		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:	er: umber:		Date: Surveyor: Organization:		
4.3.1.4 Corrosion resistance test Regulation			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%	show no corrosion which could affect its efficient functioning.		Salt water solution:		
of 35±3°C for 160 h without (not stated)	interruption.	. The Hydrostatic Release Unit should be next subjected to the		Time exposed to spray: hrs		
					Comments/Observations	
					Passed: Failed:	

Ну	Model:		Model:		Time:
4.3	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 from the cold chamber that same day and left exposed under ordinary room conditions at a temperature of 20°C ±3°C until the next day.		y and left ary room			

Hydrostatic release units	lodel:		Date: Time: Surveyor: Organization:	
4.3.1.6 Submergence and manu	ual release test	Regulations: I	_SA Code IV/4.	.1.6.3; MSC.81(70) 1/11.2.3
Test Procedure		Acceptance Criteria		Significant Test Data
The hydrostatic release unit should tested by applying a buoyant load its designed capacity while the o submerged in a water or in a wa pressure testing tank. It should rele depth of not more than 4 m. On co of these tests and resettir hydrostatic release unit should be of being released manually if it is o to allow manual release of the unit.	dequal to device is ater-filled ease at a ompletion ng, the capable designed transformation tran	ould release the buoyant load at m. eleased if it is designed for manual ne eleased if it is designed for manual ne signs of corrosion or degradation. tatic Release Unit should then nex gth Test of 4.3.1.7	able of being release. ould show no	

Hydrostatic release units	Model:	er: umber:	Date: Time: Surveyor: Organization:		
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	
				Tensile test time: minutes. Operated manually: yes/ no Comments/Observations	
				Passed: Failed:	
4.3.1.8 Technical tests on	the membra	ne - 1 Regulations: LSA 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	I.	Comments/Observations (Heat): Passed: Failed:	

Model:		odel:		Date: Surveyor: Organization:	
4.3.1.9 Technical tests on th	ne membran	e - 2 Re	gulations: LS	A Code I/1.2.2	2; MSC.81(70) 1/11.6
Test Procedure		Acceptance C	riteria		Significant Test Data
Test for surface resistance to	oil:	Test for surface resistance to oil:			Comments/Observations (oil)
 .1 Number of specimens: 2 membranes .2 Temperature: +18°C to +20°C .3 Type of oil: A mineral oil meeting the following requirements: .a Aniline point: 120°±5°C Flashpoint: minimum 240°C .b Viscosity: 10-25 cSt at 99.0°C .4 The following oils may be used: ASTM Oil No.1, ASTM Oil No.5, and ISO Oil No. 1 .5 Testing Period: 3 h on each side 				Passed: Failed: Comments/Observations (seawater) 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 deteri	ioration.		Comments/Observations (detergents)
Resistance to detergents:		Resistance to detergents:			Types used: -
Two membranes should be immersed for 7 days in detergents commonly used on board ships at least temperature of +18°C to +20°C.		The membranes should not be affected by the detergents. The Hydrostatic Release Unit should then next be subjected to the Solar radiation test of 4.3.1.10.		Passed: Failed:	

Hydrostatic release units	Manufacturer: Model: Lot/Serial Number:		Date: 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 radiation test to paragrap standard IEC 60945:2002.					
Note: The solar radiation te waived where the manufacture produce evidence that the employed will satisfy the UV stabilized.	er is able to e materials			Passed: Failed:	

	Manufacturer Model:	:	Date: Survevor:	Time:
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	.1.6.2; MSC.81(70) 1/5.15				
Mode	facturer:	er: Date: Time: Surveyor:			
Test Procedure	Acceptance Criteria	L	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		Lot/Serial Numb	per:	Date: Time: Surveyor: Organization:		
4.3.2.1 Submitted dra			cuments			
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:		Time:				
inboard engines	Model: Lot/Serial Number:	Surveyor: Organization:					
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:					
		Quality assurance Yes/No Comments/Observ	System acceptable				

Lifeboat and rescue boat inboard engines	Model:	Sur\	rveyor:	Time: :: tion:		
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:	Su	urveyor:	Time:			
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.		min after starting from cold with the lifeboat out of the water. The engine should not be damaged as a result of this test.					
4.3.2.5 Submerged engine to	est	Regulations: LSA C	Regulations: LSA Code 4.4.6.4; MSC.81(70) 1/6.10.6				
Test Procedure		Acceptance Criteria	Significant Test Data				
The engine should be operated 5 min while submerged in w level of the centreline of the cra	ater to the	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: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 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		Lot/Serial Nu	:mber:	Date: Time: Surveyor: Organization:	
4.3.3.1 Submitted dr Submitted drawings a	<u>awings,</u> nd docu	reports and de	ocuments		
_					Status
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:						
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	Standard Used: Quality assurance Procedure: Quality assurance Manual:					
		Quality assurance System acceptable?					
		Yes/No					
		Comments/Observations:					

Lifeboat buoyant material	Lot/S	erial Nu	ımber:						Su	Date: Time: Surveyor: 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:	Date: Surveyor: Organization:				
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:		Time:				
4.3.3.3 Temperature cycling test	t	Regulations:	Regulations: LSA Code 1.2; MSC.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	
 alternating cycles need not follow each other and the following procesten cycles is acceptable: .1 An 8 h exposure at a minimum +65°C to be completed in one date. .2 the specimens removed from the that same day and left exposed room conditions at a temperate until the next day; .3 an 8 h exposure at a maximum -30°C to be completed the next day. .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. 	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 buoyant material	Manufacturer: Model: Lot/Serial Number:			Surveyor:	Time:
Lifeboat buoyant material 4.3.3.7 Tests for water absor Test Procedure The test should be carried of specimens as supplied. The should be recorded at the be- end of these tests. The test should be carried out in and the specimens should be in a period of seven days under a for of water. The results should state the bu- in N which each specimen co- out of the water after 1 and immersion (the selection of a for suitable for obtaining this result indirectly is left to the discri- testing authority).	Lot/Serial N ption put on two dimensions ginning and fresh water nmersed for 1.25 m head uoyant force uld support nd 7 days sest method t directly or	Acceptance Crit	Regulations: LS/ eria hould not exceed show no sign of cracking swelling,	Organization:	2.6.5, 2.6.6, 6.2.2 & 6.2.8 ificant Test Data Dimensions after test X X X X 8 % Buoyancy after 7 days 8 % 8 %

Lifeboat buoyant material	Manufacturer: Model: Lot/Serial Number:			Date: Time: Surveyor: Organization:		:	
4.3.3.8 Crude oil test			Regulations: LSA	Code 1.2; MSC.81	1(70) 1/6.2.2, 6.2.3	3.1, 6.2.7 & 2.	6.7
Test Procedure		Acceptance Cri			Significant Test Data		
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		t not exceed 5%. w no sign of dama velling, dissolution		fore test Dim X mensions % 1 day oyancy % 10 servations	ensions after XXX 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		Significant Test Data			
Two specimens of the materia immersed in marine fuel oil (gra period of 14 days under a 100 mi specimens should be tested as the manufacturer and at no temperature (approximately 18°	ade C) for a m head. The supplied by ormal 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	
After completing the above imm two specimens should be imm period of seven days under a 1 of water.	nersion, the lersed for a	mechanical qualities.	11	oyancy after 1 day	%	12% Buoyancy after 7 days	
The results should state the buin N which each specimen co out of the water after 1 a immersion (the selection of a t suitable for obtaining this result indirectly is left to the discr testing authority).	uld support nd 7 days test method t directly or		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:	Date: Surveyor: Organization:		
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,		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 discr testing 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	Manufacturer: Model: Lot/Serial Number:		Si	ate: urveyor: rganization:	
4.3.3.11 High octane petroleur	n spirit test	Regu	ations: LSA (Code 1.2; MSC.81(70) 1/6.2	.2, 6.2.3.4, 6.2.7 & 2.6.7
Test Procedure		Acceptance Criteria			icant Test Data
immersed in high octane petro	leum spirit a 100 mm e tested as er and at		n of damage	· · · · · · · · · · · · · · · · · · ·	ХХ
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:	Buoyancy after 7 days

Lifeboat buoyant material	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:				
4.3.3.12 Kerosene test			Regulations: LSA Code 1.2; MSC.81(70) 1/6.2.2, 6.2.3.5, 6.2.7 & 2.6.7				
Test Procedure		Acceptance Criteria	Significant Test Data				
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 nor temperature (approximately 18°C	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 imn 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 materia	Manufacturer: _ Model: _		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:		Time:		
4.3.4.1 Quality assurance		Regulations: MS	SC.81(70)2/1.1,1.2		
Except where all appliances of a of the International Convention International Life-Saving Applia inspected, representatives of t inspections of manufacturers	a particular type are required by chapter III for the Safety of Life at Sea, 1974, or the nce (LSA) Code, as amended, to be he Administration should make random to ensure that the quality of life-saving omply with the specification of the approved	Standard Used:			
ensure that life-saving appliance prototype life-saving appliance a	ed to institute a quality control procedure to s are produced to the same standard as the approved by the Administration and to keep as carried out in accordance with the				
		Comments/Obse			

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			ce Criteria		Significant Test Data
			should be marked of the fabric man			Marking Schedule: Comments/Observations
1010 T				Develotions I.O.		Passed: Failed:
4.3.4.3 Te	ensile Strength		Accentan		A Code IV/4.	2; MSC.81(70) 1/5.17.13.2.2.1
Tensile Stre	Test Procedure ength ISO 1421:1998	tensile stre for warp at be 30% ov be expres between t provided to specified.	Acceptane ed by the method de ngth should be a mi nd weft. Maximum e ver a 200 mm gauge sed as a percenta he jaws. Where to form an inflatable fl The inner/outer l rength of 1470 N/50	escribed in ISO 14 inimum of 2255 N/5 longation, for the al e length, the elonga ge of the initial wo layers of floor oor, the main floor s ayer may have	50 mm width bove should ation should test length r fabric are hould 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:	Organizatio	n:	
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	
			weftN	
	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	m the test sample cut 3 specimens each in warp and weft ections, 76 mm \pm 1 mm wide and 400 mm long, with the length sely parallel to the warp and weft yarns. Space the selection ross the full length and width of the sample. Make a 12.5 mm across the middle of each specimen at right angles to the gth.		
		grip the specimen under test securely and evenly in the grips, which should be 200 mm apart, so that the specimen length is closely in the direction of the pull.		
		e the machine in accordance with ISO 1421:1998. The im load sustained is recorded as the wound tear strength, and rage for the 3 specimens is calculated.		

Inflatable liferaft materials	Model:	ufacturer: el: Serial Number:		Date: Time: Surveyor: Organization:	
4.3.4.5 Surface Receptivene	ss and Adhesic	dhesion of Surface Coating Regulations: LSA Code IV/4			
Test Procedure		Acceptance			Significant Test Data
Surface Receptiveness and Ac of Surface Coating ISO 2411:20	000 S th	 When tested by the method described in ISO 2411:2000 the Surface Receptiveness on either face should not be less than 75 N/50 mm width. For dry Surface Coating Adhesion a minimum of 75 N/50 mm is 			
	.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		Surveyor:		
	Lot/Serial Number:	Organizatio	n:	
4.3.4.6 Effects of Ageing	Regulation	s: LSA Code IV/4	.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	 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 the original tensile strength before ageing. 	.3 Ultra-Violet Resistance – (option 1) this test should be Tensile strength after ageing		
	 4892-4:2004 - Open-flame carbon- arc lamps, a .a Expose the conditioned samples to an enclude lamp without "Corex D" filters for 100 h. The 	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	
	 time should be 100 h. 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. c The exposed material should be bent, more side out, around a 3.2 mm mandrel and exan cracking. There should be no cracking. 	after exposure e strength should strength before e heavily coated	% change: - Passed: Failed:	

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

4.3.4.6	Effects of Ageing (contin	nued) Regulations: LSA Code IV/4.2; I					SC.81(70) 1/5.17.13.2.2.4
Test Pro	cedure	Acceptance Criteria					Significant Test Data
		.3 Ultra-Violet Resistance – (option 2) Alternatively, this test may be performed in accordance with the methods specified in ISO 4892-				Inspect for:	
		2:2006 with ame	ndment 1:2009 – X d be exposed unde	Xenon À	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 specime n only	Nil	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 examined visually for cracking. There should be no cracking during this examination.					

[Manufacturer:	Date:	Time:			
Inflatable liferaft materials		Surveyor:				
	Lot/Serial Number: Organizatio					
A 2 A C Effects of Arcing (a)		NICA Code IV//4.21 M				
Test Procedure	4.3.4.6 Effects of Ageing (continued) Regulations: LSA Code IV/4.2; MS Test Procedure Acceptance Criteria					
	The performance requirements specified in this subpar	agraph relate to the	Significant Test Data			
	behaviour of individual specimens under particular condi spectrum of light from the Carbon Arc differs from th	itions of test. As the	% change:			
	caution should be exercised in interpreting the test resul		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			
			Brittleness? YES/NO			
	For 4.3.4.6.4.1 and 4.3.4.6.4.2 cut from the test sample 4 100 mm square with the sides closely parallel to the wa	arp and weft threads.				
	Measure the dimensions of two specimens accur For 4.3.4.6.4.3 cut two sets of specimens as in 4.3.4.3.	ately for 4.3.4.6.4.1.				
	.5 When tested as below the difference in dimension before and after ageing should not differ by more		Dry aged specimen Wet aged specimen			
	.6 Ageing of specimens test procedure:		Comments/Observations			
	4.3.4.6.4.2, and one set of specimens for 4.3	.a Freely suspend one specimen each for 4.3.4.6.4.1 and 4.3.4.6.4.2, and one set of specimens for 4.3.4.6.4.3 in air for 7 days at 70°C ± 2°C. Suspend the other specimens above water in a loosely closed vessel for 7 days at 70°C ±2°C.				
	.b Remove the two measured specimens from the 15 min at room temperature measure the dim the percentage changes in warp and weft direct	nensions 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	SC.81(70) 1/5.17.13.2.2.4		
Test Procedure	Acceptance Criteri	a	Significant Test Data		
	s. After 15 min at room necutively in two directions each other so as to reduce the e quarter of its original size. creases but with each fold ng, press the fold by rubbing the specimens for cracks, eness. e the two sets of specimens d specimens for 1 h in air at as for 24 h. Test in accordance				
4.3.4.7 Low Temperature FI	with paragraph 4.3.4.3. exing Reg	ulations: LSA Code IV/4.2; M	IV/4.2; MSC.81(70) 1/5.17.13.2.2.5 Significant Test Data		
Test Procedure	Acceptance Criteria	Acceptance Criteria			
Low Temperature Flexing ISO 4675:1990	 .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, .a when tested at the specified low temperation show cracks; and .b there should be 6 test specimens, 3 cut parallel to the warp and 3 cut with the to the weft direction. 	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	Image: Second state sta		n:
4.3.4.8 Flex Cracking	Regula	ations: LSA Code IV/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 the finger.				
	 .2 The test should be carried out no vulcanization or curing. .3 The apparatus, preparation of procedure should be in accordance paragraph A.2.5. Each coated factorial coated	Passed: Failed:				
4.3.4.11 Weft Distortion		Regulations: LSA Code IV/4.2; 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	Iatable liferaft materials Manufacturer: Lot/Serial Number:			Time:
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 for Thermoplastic Coated Materials only		 .1 When tested by the methods prescribed below, the following performance values should be achieved: .a Coating adhesion 50 N/50 mm minimum .b Blocking resistance 100 g maximum 		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	Model:			Surveyor: _	n:
4.3.4.15 Tensile Strength (Fab	rics used for outer	r outer canopies) Regulations: LSA Code IV/4.2			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	or:		Data:	Timo
	Manufactu	rer:		Time:	
Inflatable liferaft materials	Model:		· · · · · · · · · · · · · · · · · · ·		
	Lot/Serial I	Number:	· · · · · · · · · · · · · · · · · · ·	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?
g		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 (Fabrics used for outer/inner canopies) Regulations: LSA		SA Code IV/4.2; MSC.81(70) 1/5.17.13.2.3.4			
Test Procedure		Acceptance			Significant Test Data
Waterproofness		.1 When tested by the metho		, no water	Did water pass through the cone?
Waterprooffiess					YES/NO
		should pass through the cone within 30 min. The coated fabric should not contain any material that is known to			
		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 teste following procedure:			ested in accordance	ce with the	
		Fold the specimen twice at rig			
		the form of a cone. Secure the c			
		it into a suitable funnel support			
		water into the cone. Record a		water to the	
		outside of the cone after 30 m	in.		

Inflatable liferaft materials		Surveyor:		n:	
4.3.4.19 Surface Receptivene (Fabrics used for outer canopi		dhesion of Surface Coating	Regulations: L	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		Surveyor: _	Time: on:	
4.3.4.21 Effects of Ageing (Fal	brics used for outer	r canopies)	Regulations: LS	A Code IV/4.	2; MSC.81(70) 1/5.17.13.2.3.7	
Test Procedure		Acceptance 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)	Regulations: LS	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	Manufactu Model: Lot/Serial	nrer: Number:		Surveyor:	n:
4.3.4.23 Porosity (Fabrics us	ed for inner	canopies)	Regulations: LS	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:
 4.3.5.0.3 Quality assurance 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. 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. 	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	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				
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:			
	 .3 provide the following information: serial number; 	Passed: Failed:			
Electrical short circuit protection	 identification of the manufacturer; easily understandable symbols for on/off switching where applicable, information on proper batter disposal by the words: "DO NOT INCINERATE DO NOT RECHARGE/DO NOT TAMPER"; and 	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;	
	.3 be made of non-magnetic material;.4 be constructed to avoid accidental access to dangerous voltages;	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				
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:		e: Time: /eyor: anization:
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.	d electromagnetic paragraph 9 to ensure electromagnetic compatibility on A. 694(17) and between search light and other radiocommunication 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
	I	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	Nodel: Surv		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 ³ 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	t			
4.3.6.7	Mould growth	ntest			
4.3.6.8	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:	Inufacturer: Date: odel: t/Serial Number:		
4.3.6.0.2 Submitted drawings, reports and documents					
Submitted drawings and documents					
Drawing No.	Revision No. & d	Revision No. & date 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:		Surveyor:	Time:
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		Quality assurance Standard Used: Quality assurance Procedure:		
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	 .1 precise definition of intended use (e.g. "Exterior ligh inflatable liferafts"); .2 serial number; .3 identification of the manufacturer; .4 easily understandable symbols for on/off switching; a .5 where applicable, information on proper battery disp by the words: "DO NOT INCINERATE/DO N RECHARGE/DO NOT TAMPER". 	nd osal

	Survival craft position indicating lights	Manufacturer:	Date:	Time:
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	Model:	Surv	/eyor:	
	Lot/Serial Number: Org		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 provided with electrical short circuit protection to prevent damage or injury;		Short circuit protection: PASS/FAIL	
Construction and materials	Be constructed with proper work	kmanship and materials.	Construction: PASS/FAIL	
Fitting	 Survival craft interior lights should: .1 be fitted inside the survival craft: .2 be fitted to the top of the survival craft to ensure a light emission in all directions of the upper hemisphere. 			
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			
		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 sa	ne 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	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 watertightne	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	Model:		Surve	
	Lot/Ser	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:
	voft vocition indication lights	Madal		Surveyor:	
Survival c	raft position indicating lights	Lot/Serial Number:		Organization:	
4.3.6.2 7	Femperature cycling test – Test	data	Regulations: LSA Cod	de 1.2.2.2; MSC.8 [,]	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

	Manufacturer	·		Date:	Time:
Survival craft position indicating lights	Model:			Surve	eyor:
	Lou/Serial Nu	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:
	ot/Serial Number:	Organiz	zation:
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 $ \begin{pmatrix} \hline 0.2 \\ \hline 0.2 \end{pmatrix} $ where: I is the instantaneous inter 0.2 is the Blondel-Rey c of integration in seconds. Flashing lights with a flas be considered as fixed/ste luminous intensity. Such luminous intensity in all dir time interval between sw luminous intensity (incan below the required luminou should be disregarded (se	$\frac{\int_{t_1}^{t_2} I dt}{I (t_2 - t_1)} \int_{max}^{t_2} I dt$ 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 requirections the upper hemisphere and the requirections of the upper hemisphere.	ula: Comments/Observations mits may heir ired The ired oent

	Manufacturer:		Date:	Time:
Survival craft position indicating lights	Model:		_ Surveyor:	
Survival crait position indicating lights	Lot/Serial Number:		_ Organization:	
4.3.6.3 Light tests (continued)	I		LSA Code 4.1.)1/10.1.2, 10.1.3, 10.1.	3.3/4.1.3.4/4.4.7.10/4.4.7.11/5.1.1.1; 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	Time: eyor: nization:
4.3.6.4 Chromaticity test		Regulations: LSA Co 1/10.4/10.4.10	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 external light which has passed the light should be tested for chromaticity to determin it lies within the boundaries of the area "we the diagram specified for each colour International Commission on Illumination The chromaticities of the survival craft lights be measured by means of colorimetric measure equipment which is calibrated to the appr National or State Standards Institute (Not Publ. No. 15.2 contains further inform Measurement on at least four points of the hemisphere should be taken.	ine that hite" of by the (CIE). should rement ropriate ce: CIE nation).	The measured chromaticity coordinates shoul within the boundaries of the area of the diagra per CIE. The boundaries of the area for white I 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 Sig with colour tables to be developed by CIE.)	m as lights	Results: All chromaticity data is to be attached here. PASS/FAIL Comments/Observations
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 inspection 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, able to switch the survival craft light in its 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	workmanship an	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		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.	m funiculosum;			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	aintained at a humidity of not ould be 28 days.			
(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	veyor:
	Lot/Serial Number:		Orga	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	ate: Time: urveyor: organization:
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 a solar to the test is a solar test is a sola	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 ^{Ig,} PASS/ FAIL

Survival craft position indicating lights	Model:	Su	veyor:	Time:
4.3.6.11 Rain test and watertightness test	1	Regulations: LSA Code 1.2.2.4	/1.2.2.8/4.1.	3.3/4.1.3.4; MSC.81(70) 1/ 10.4/10.4.7
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 leas 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	
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.	ter PASS:	FAIL: ents/Observations

4.4 DAVIT-LAUNCHED LIFEBOATS EVALUATION AND TEST REPORT

4.4.0 General Information

- 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 Number:			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 lifebo	oats	Manufacturer: _ Model: Lot/Serial Numl	Date: Time: 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:		Time:			
4.4.0.3 Quality assurance Except where all appliances		egulations: MSC.81(70)2/1.1,1.2				
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					
	tests carried out in accordance with the					
		Quality assurance System acceptable?				
		Yes/No				
		Comments/Observations:				

Davit-launched lifeboats 4.4.1.1 Occupant space	Lot/Serial Number:			Date: Surveyor: Organization: s: LSA Code 4.4.1.8, 4.4.2.2/3, 4.4.3.5		
Test Procedure	2		3A COUE 4.4.1	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		
		 Seating Space Width – at least 430 mm Depth – at least 100 mm each side of a p from the back Knee Space (Seating on seats) at least 6 the back Knee Width – at least 250 mm Leg Space (Seating on floor) – at least 11 the back Overlapping Seat Vertical Separation – mm Seat Horizontal Overlap – 150 mm maxir Each seating position should be clearly in 	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				ate: Time: irveyor:			
Davit-launched lifeboats		erial Number:		Orgar	nization:			
4.4.1.2 Fittings, provision	adders (1 of 4)	SA Co	ode 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 equipment water and provision.			.5	Passed:	Failed:	
		Means provided for collecting rainwater. 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:	
		 Approved light with 12 h capacity s provided inside. 	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
	 .11 The lifeboat is of a highly visible col .12 Sufficient buoyant oars to make he .13 Provided with a manual pump sui automatically self-bailing. Partially enclosed lifeboats 	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	
	 access hatches have means to he position 	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		
	Lifeboat Ladders Ladders that can be used at any boarding entranc lowest step when in place should not be less waterline.			Passed:	Failed:
	Other Provisions 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		Sur	urveyor:	
Davit-launched meddats	Lot/Serial Number: Organization:				
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 porcono 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, a batteries provided by solar charge or ships power su		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	 A tiller should be capable of control Rudder permanently attached to the Except when remote steering is p is permanently attached or linked to Rudder and tiller arranged so as not operation of the release mechanism 	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:	
		 The mechanical protection (interlock) engages only we mechanism is completely and properly reset, to preaccidental release during recovery of the boat 	
		On-load release mechanism needs deliberate sustained action by the operator	
		 Mechanical protection provided beyond that non required for off load release 	
		 Release control marked in a color that contrasts with surroundings 	^{n the} Passed: Failed:
		Where a single fall system is provided: Off-load release:	
		 Where a single fall and hook system is used for launce 	Passed: Failed: N/A
		 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. 	able Comments/Observations bility ingle

Davit-launched lifeboats	Model:	nber:	Surveyor:	Time:
4.4.1.6 Drain valve		.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	 Fitted near lowest point on the hull Automatically opens to drain water from the boat is not waterborne and close entry of water when the boat is wate Cap or plug attached to the boat by a or other suitable means Readily accessible from inside the life Position clearly indicated 	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 Cri	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 v			
waterline resulting from this		holed in any one location		Trim: List:	
watertight stowage compa		assuming no loss of buoyancy r	naterial and no other		
individual drinking water con		damage.			
containers aboard and					
compartments, which should		In case of totally enclosed life			
the flooding tests. Ballast					mm
density should be substituted 1		condition is not more than 500			
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 ³ (for example wat					
represent a volume similar to	,				

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Nur	Manufacturer: Model: Lot/Serial Number:			Time:	
4.4.2.2 Freeboard test			Pogulations: I	SA Codo 4 4 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			0	
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	mebbars length of 100 mm, w		Angle of heel, if applicable:Deg.	
side of the centreline. The free		greater, and				
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	
				ast 1.5% of the		
			pats length or 100 mm, whichever is the greater.			
4.4.2.3 Self-Righting Test	(Totally Enclo	sed Lifeboats)	Regulations: L	SA 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 P	rocedure		Acceptance Cr		Significant Test Data	
A suitable means should b	e provided to re	otate the lifeboat	After release, the lifeboat sho	ould always retur	rn to	
about a longitudinal axis			the upright position without t		f the Loaded:	
release it. The lifeboat, in		,	•		Passed Failed	
be incrementally rotated to						
including 180° and should			At the beginning of these test			
be conducted in the followi	•		be running in neutral position	and:	Light:	
.1 when the lifeboat with its e			.1 unless arranged to stop automatically Passed: Failed:			
position with properly see			when inverted, the engine should continue			
fully equipped lifeboat wit			to run when inverted and			
on board. The weight us			lifeboat has returned to the	ne upright positio	on; Passed: Failed:	
assumed to have an aver secured at each seat lo			and			
			.2 if the engine is a	ranged to st	top	
gravity approximately 300 mm above the seat pan so as to have the same effect on stability as when the lifeboat			automatically when inve			
is loaded with the numbe			easily restarted and run			
approved; and			lifeboat has returned to t	he upright positio	on.	
.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				
may be conducted in connect				
test.				
1001.				

Davit-launched lifeboats	Model:	Surv	veyor:	Time:
4.4.3.2 Seating space test		Regulations: LSA C	Code 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 c	eriod of 3 cargo ship a lifeboat nbarkation ent can be with the	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 be from the release mechanism ju ground or the water. The lifeb loaded so that the total man times the mass of the lifeb 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 pproved. 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: 1.1 load Passed: Failed: Waterborne release: 1.1 load:

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization: _	Time:
4.4.4.2 Towing release tes	st	Regulation	ns: LSA Code 4.4.7	.6.5; MSC.81(70) 1/6.9.3
	ocedure	Acceptance Cr	riteria	Significant Test Data
Test Pro With the operating mechanis demonstrated when the life complement of persons and e of 5 knots that the moveable f Furthermore, with the operat should be demonstrated that its full complement of person at speeds of 5 knots can be should be demonstrated as for .1 a force equal to 25% of hook should be applied to direction of the boat at an This test should be cond as the forward direction; .2 a force equal to the saf should be applied to the direction at an angle of should be conducted on .3 a force equal to the saf	m disconnected it should be aboat is loaded with its full quipment and towed at speeds nook component stays closed. The lifeboat when loaded with s and equipment when towed released. Both of the above and a the above above and a the above and a the above and a	Acceptance Cr There should be no dama these tests. The lifeboat is released sa release mechanism.	riteria age as a result of atisfactorily by the ended for on-load	
between the positions of longitudinal axis of the b	tests 1 and 2 (i.e. 45° to the oat in plan view) at an angle test should be conducted in			Position 1:PassFail Position 2:PassFail Position 3:PassFail Position 4:PassFail
				Comments/Observations

Davit-launched lifeboats	Manufacturer: Model: Lot/Serial Number:		ate: Time: irveyor: ganization:
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 Proce		Acceptance Criteria	Significant Test Data
A release mechanism shoul tested as follows: The lifeboat release and ret longest used connection cal with the system should be n according to instructions equipment manufacturer and of its safe working load and n Load and release should be n the lifeboat release and ret 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	5	eleased h it is Force Applied:N h it is Cable Length:m Cable Length:m m Check the box for each release: Check the box for each release: d" if any thended but the 1:2:3:4:5:6: 13:14:15:16:17:18: 19:20:21:22:23:24: 25:26:27:28:29:30:

			Date:	Time:
Davit-launched lifeboats	Model: Lot/Serial Nun	nber:	Organizati	on:
4.4.4.4 Cyclic loading test	+	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	est 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 repe				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			Surveyor:	Time: on:
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 cable is used it a should be the maximum length specified by the manufacturer, and secures in the same manner it would be secured in the lifeboat.		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:			Surveyor:	Time: on:
4.4.4.6 Second release most strength	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 e secured 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 designs to defend the territory others and	4			
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	Model:	nber:		Date: Time: 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.		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.			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		Acceptan	ice 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 a unduly affected by magnet 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 b	y test that it is	Helpless people can be brought on board the lifeboat from the	Passed: Failed:		
possible to bring helpless per the lifeboat from the sea		sea.			
possible to bring helpless pe the lifeboat from the sea.			Comments/Observations		
			Comments/Observations		
			Comments/Observations		
			Comments/Observations		

Davit-launched lifeboats	Model:					-	Sur	e: veyor: janization: _	Time:
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	ith a properly e mass of the lich it is to be speed of not	characteristi There should result of this	The lifeboat should not exhibit unsafe characteristics. There should be no damage to the lifeboat or its e						
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			Ac	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	Model:			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 should lifeboat, in a free hanging i pulled laterally to a position so it will strike a fixed rigid very velocity of 3.5 m/s (keel is rail the free hanging position). The released to impact against the In the case of totally enclosed lifeboat to determine the model exposure to acceleration consistenders, lifeboat elasticitar arrangement. In case of totally enclosed lifebric safety belts and fastenings with high loads as a result of the secured about weights equal to the secured about weights equal to	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	Accept The impact test should be .1 no damage has bee the lifeboat's efficien .2 machinery and othe full satisfaction; .3 no significant ingres and .4 accelerations measu subsequent rebound test, are in complia "Emergency Limits" s respectively.	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	4.6.5; 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 meboats	Lot/Serial Number:		Organization:			
4.4.7.1 Impact test (2 of 3)		Regulations: LSA C	code 4.6.5; MSC.81(70)) 1/6.17.1 to 6.17.14		
	g Acceleration Forces Selection,		dynamic response mo			
placement and mounting of a				method to evaluate potential for the occupant		
	measure the acceleration forces in the			cceleration forces. In the dynamic response		
lifeboat should:				gle-degree-of-freedom, spring-mass acting in		
	response for the test in which they are			e 1. The response of the body mass relative		
	ency response should at least be in the			e measured accelerations, can be evaluated		
range of 0 to 200 Hz;				nistration. The parameters to be used in the		
	for the acceleration forces that will		table 1 for each coord			
occur during the tests; a				nalysis, the measured accelerations should		
	6. Accelerometers should be placed in		imary axes of the seat.	and analyzis is the displacement time history of		
	e principal axes of the lifeboat, at those etermine the worst occupant exposure	The desired outcome from the dynamic response analysis is the displacement time-history of				
to acceleration.		the body mass relative to the seat support in each coordinate direction. At all times, the following expression should be satisfied:				
	e mounted on a rigid part of the interior of					
the lifeboat in a manner to mi			$CDRR = \sqrt{\left(\frac{d_x}{S_x}\right)^2 + }$	$\left(\frac{d_y}{d_z}\right)^2$, $\left(\frac{d_z}{d_z}\right)^2$ = 1		
	elerometers should be used at each		$CDRR = \left \left(\frac{\overline{S_r}}{S_r} \right) \right +$	$\left(\frac{\overline{S_{v}}}{\overline{S_{v}}}\right)^{-+} \left(\frac{\overline{S_{z}}}{\overline{S_{z}}}\right)^{-} \leq 1$		
	on forces are measured so that all likely		N ~~			
acceleration forces at that loca		where d_X , d_V and d_Z are the concurrent relative displacements of body mass with respect				
	and mounting of the accelerometers	to the seat support, in the x, y and z body axes, as computed from the dynamic response				
should be to the satisfaction	-	analysis and S_X , S_V , and S_Z , are relative displacements which are presented in table 2				
		for the appropriate launch condition.				
Recording method and rate		ior the appropriate in				
	forces may be recorded on magnetic	Evaluation using th	a SRSS mathod			
	or a digital signal or a paper plot of the			sponse model, the potential for an occupant		
	oduced. If acceleration forces are to be			eleration can be evaluated using the SRSS		
	tal signal, the sampling rate should be at	method.	errie injured by arr deet			
least 500 samples per second						
5	eleration signal is converted to a digital	Before performing th	e SRSS analysis, the	measured accelerations should be oriented		
signal, the sampling rate shot	uld be at least 500 samples per second.	to the primary axes				

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 S Human Body	Representation of the	Full-scale acce	eration data sl	hould be filtered with	n no less than the equivalent of a 20 btable to the Administration may be			
					ot less than tha		e filtered with a low-pass filter having following expression:	
1 - Seal Sala	T Seen and				Where f_{model} is the frequency of the filter to be used, L_{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 launch 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		8.71	-Y = Eyeballs		7.0	7.0	
, ,	4.09		4.95	+Z = Eyeballs		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: 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		 .1 no damage has been sustained that wo lifeboat's efficient functioning; 	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	erated t o full			
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:				
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:		Surveyor:	Time:
4.4.7.4 Overload test (1 o	f 3)	Regulatio	ns: LSA Code 4.4.1	.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
 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 .1 deflection of keel amids .2 change in length as meas of stem and stern posts .3 change in breadth ove quarter length forwa (ΔB 2) and the quarter .4 change in depth meas keel (ΔD). The lifeboat should then be distributed weights to repress lifeboat loaded with the full cor the type of ship for which it measurements should again Additional weights should the suspended load is 25%, 5 greater than the weight of t loaded lifeboat. In the case 	by falls; The unloaded by blocks or suspended ghts should be erected ag. The following e made: hips (Δ K); asured between the top (Δ L); er the gunwale at the rd (Δ B1), amidships er length aft (Δ 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	SA 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
				♦ 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-launched lifeboats Manufacturer: Model: Lot/Serial Number:		Surveyor:	Time: :: tion:
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	Model: S		Surveyor:	Time:
4.4.8.1 Air supply test		Regulations: LS	SA 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.		within the enclosure should be continuously monitored to ascertain that a small positive air pressure is maintained within the lifeboat and to confirm that noxious gases cannot enter. The internal air pressure should never fall below the outside atmospheric pressure, nor should it exceed outside atmospheric pressure by more than 20 hPa during the test. It should be ascertained, by starting the engine with air supply turned off, that when the air supply is depleted, automatic means are activated to prevent a dangerous 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	
 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 the fire test. The kerosene should be the fire test. The kerosene should be fire test, the measured and recorded as a locations: .1 at not less than 10 posit of the lifeboat; .2 at not less than 5 positi 	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:			
			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: LS/	A Code 4.9.1	l; 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: Surveyor:		rveyor:	Time:
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 Nur	nber:		Surveyor:	Time:
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	Model: Lot/Serial Nur	:mber:		Surveyor:	Time:
4.5.0.1 General data and s	pecifications		Regulations:	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 Num!	per:	Date: Time: Surveyor: Organization:		
4.5.0.2 Submitted d	rawings, reports and c	ocuments			
Submitted drawings 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	all lifeboats Manufacturer:			Surveyor:	Time:
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
		Seating Space 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:	
			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.		 Fittings and Provisions 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. Approved light with 12 h carreading provided inside. Adequate view on all sides for maneuvering. Provided with a manual effective bailing or be auto and understand the start of the provided in the provided with a manual effective bailing or be auto and the provided in the provided with a manual effective bailing or be auto and the provided in th	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 .5 P .5 P .5 P .12 h .6 P .12 h .6 P .12 h .13 P .12 h .14 P .15 P .12 h .15 P .12 h .10 P .11 P .12 h .10 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:		
	and its interior of a color, which does not ca	use discomfort to the occupants.	Colour of hull:		
			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:		
		1.1 access hatches can be opened and closed from both inside and			
	1.2 access hatches have means	1.2 access hatches have means to hold them securely in the open			
	position.				
		.2 persons have access to their seats from an entrance without having to climb over thwarts or other obstructions;			
	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:				
4.5.1.4 Steering mechanis	sm		Regulations: LSA	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	 Air-cooled engines have a dexhaust it to, the outside of t Manually operated dampers from, and exhausted to, the A tiller should be capable of Rudder permanently attached Except when remote steer attached or linked to the rud Rudder and tiller arranged s release mechanism or proper 	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	 General Has two independent activation systems for the mechanism which may only be operated from the lifeboat. 	ne release Passed: Failed: the inside
		 Release control marked in a color that contrast surroundings. 	ts with the Passed: Failed:
		Release capability is adequately protected	d against Passed: Failed:
		accidental and premature use.Designed to test the release system without lau	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 ³ (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	Manufacturer: Model: Lot/Serial Number:		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				
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		

	Manufacturer: Model: Lot/Serial Number:		Date: Time: Surveyor: Organization:	
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 appr 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:

	Manufacturer: Model:				Time:	
Free-fall lifeboats	Lot/Serial Number:					
4.5.3.2 Seating space test		Regulations: LSA Code 4.4.2.2.1, 4.4.3.1/2; MSC.81(70) 1/6.7.1				
Test Procedure		Acceptance Criteria		Significant Test Data		
The lifeboat should be fitted with its engine and its equipment. The number of persons for which the lifeboat is to be approved, having an average mass of 82.5 kg and wearing a lifejacket and any other essential equipment should board the lifeboat as quickly as possible.		The number of persons should be able to board the lifeboat and be properly seated within a period of 3 min in the case of a lifeboat intended for a cargo ship and as rapidly as possible in the case of a lifeboat intended for a passenger ship.		Boarding Time:min Passed: Failed:		
The lifeboat should then be maneuvered and all equipment on board tested by an individual to demonstrate that the equipment can be operated without difficulty and without interference with the occupants.		The boat can be manoeuvered and the equipment can be operated without interference with the occupants.		SOLAS inherently buoyancy lifejacket worn: Yes/No Comments/Observations		
4.5.4.1 Release test		Regulations: LSA Code 4.7.6.2; MSC.81(70) 1/6.9.6				
Test Procedure		Acceptance Criteria		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.				

Erec foll lifeboote Model:		nber:	Surveyor:		Time:	
4.5.4.2 Load test		Regulations: LSA Code 4.7.6.5; MSC.81(70) 1/6.9.7				
Test Procedure		Acceptance Criteria		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.		equal to six times the working load.			Working Load:N Force Applied:N Passed: Failed:	
(Testing to failure is suggested, but not required.)		(If tested to failure, working load may be taken as1/6 the failure load.)		- accou anoa		
					Comments/Observations	
4.5.5.1 Manoeuvring		Regulations: LSA Code 1.2.2.8; MSC.81(70) 1/ 6.10.1				
Test Procedure		Acceptance Criteria		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 a	nd operate sati	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 Eailed
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.		
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 hanner. Depending havior of the free- rs may also have ect correct behavior sed, sufficient full- ucted to verify the	 considered acceptable if: .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 .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; .3 the lifeboat makes positive headway in after water entry. 	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: Lot/Serial Number:	· · · · · · · · · · · · · · · · · · ·	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		$\sqrt{\left(S_x\right) - \left(S_y\right) - \left(S_z\right)}$				
	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		
		response analysis and S_X , S_y , and 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		
o o ,	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:				
	ree-fall lifeboats Model: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> _{prof} 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		vable accelerations,	, which are presented in table 3 for the			
Z	52.9	0.224	Table 3 – SRSS Acceler	ration Limits for Life	boats			
	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	Iifeboats Model:										
		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		A Orit-ri-	Regulations: L	.SA Code 4.8;	MSC.81(70) 1/ 6.15
Test Procedure	. f (1)	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: Time: Surveyor: Organization:			
4.5.8.2 Fire test (2 of 3) Regulations:				LSA Code 4.9.1; MSC.81(70) 1 / 6.16.5			
Test Procedure		Acceptance C		Significant Test Data			
The atmosphere inside the lifeboat should be continuously sampled and		there is sufficient oxygen	Analysis of gasses				
representative retained samples should be analysed for the presence and quantity of		levels of toxic or injustances.	unous gases of	Gas <u>Level</u> A		<u>Acceptable</u>	
essential, toxic, and injurious gases or substances. The analysis should 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 fall lifebacto	Manufacturer: Model: Lot/Serial Number:		Date: Surveyor: Organization:			
4.5.8.2 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		
The pressure inside the lifebol continuously recorded to co positive pressure is being main the lifeboat. The protective system sho effective as that of the lifeboal water delivery rate and film various locations around th canopy should be equal to o measurements made on originally fire tested. <i>Note</i> : The Administration may w for any totally enclosed lifebo identical in construction to an which has successfully cor test, provided the lifeboat of size, and retains essentially the	onfirm that a ntained inside ould be as at tested. The thickness at he hull and or exceed the the lifeboat waive this test poat which is other lifeboat mpleted this differs only in	A positive pressure should be maintained inside th		Internal pressure range Min Max Passed: Failed: Comments/Observations Reference to previous test, if applicable;		

Free-fall lifeboats	oats Manufacturer: Model: Lot/Serial Number:			Date: Time: Surveyor: Organization:			·····
4.5.8.3 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			
 the engine running at its design following should be measured rated value and speed: .1 the rpm of the engine at obtain the rated speed; .2 the pressure at the delivery side of the put the rated water pressure 	ned output, the d to obtain the nd the pump to and suction and ump to obtain re. position, on an ndition, run the Measure the ickness of the xternal surface 5° by the head	Water for the system should to self-priming motor pump. It should be possible to turn "of water over the exterior of the li The seawater intake should be the intake of flammable liquids The system should be arran water and allowing complete of The delivery rate of water or the over the lifeboat should be Administration. In each condition the sprayed whole surface of the lifeboat.	be drawn from the on" and turn "off feboat. e so arranged a from the sea sur ged for flushing arainage. e sprayed water fil to the satisfac	" the flow of s to prevent face. g with fresh m thickness ction of the	Pump RPM: Suction Pressur Delivery Pressu Film Thickness: Delivery Rate: Trim or Heel 5° Head Passed: 5° Stern Passed: 5° Port Passed: 5° Starboard	re:_Pa re:_Pa re:_Pa Water Film Failed: Failed: Failed:	mm _/h n Covering Surface
and 5° by the stern, and hee					Comments/Obs	servations	