

Liferaft survey report

This report is the property of RFD Beaufort Limited and, as such, the contents must be treated as confidential and be used only for the purpose for which it is supplied.

MAIB INVESTIGATION – FAILED DEPLOYMENT OF ML LIFEGUARD FORTIES TYPE LIFERAFT

Object:

To investigate the possible cause of a failed deployment of a ML Lifeguard Forties type liferaft

Date:

Wednesday 7th November 2007

Location:

RFD Beaufort Limited, Kingsway, Dunmurry, Belfast BT17 9AF

Present:

[REDACTED] Marine Technical Manager, RFD Beaufort Ltd
– Quality Engineer, RFD Beaufort Ltd
– Principal Marine Surveyor, MCA
– Managing Director, Premium Liferaft Services

Background:

[REDACTED] of the Marine Accident Investigation Branch (MAIB), recently reported to RFD Beaufort Limited, that a ML Lifeguard Forties liferaft failed to inflate properly, when operated as a result of a marine accident. The marine accident involved two chartered fishing boats which collided at a reported speed of approximately 30 miles per hour.

The collision resulted in one of the vessels sinking quickly, during which time the liferaft was deployed. It was reported that the force of the inflation was sufficient to break the container banding straps, securing both halves of the container together. The liferaft was then reported to only partially inflate to a condition where it was considered not possible to be boarded. The end of the painter line was secured to the deck of the vessel and therefore the liferaft was pulled down beneath the water surface as the vessel sank. The liferaft was subsequently released some days later and returned to RFD Beaufort Limited for investigation.

Details:

Life raft details:

Manufacturer: Lifeguard
Manufactured: July 1989
Type: ML Lifeguard Forties
Persons: Four
Serial No. 40687
Container: Rigid/Flat
Floor: Inflatable
Painter length: 10 m (cut to release from wreck)

RFD Beaufort Limited
Kingsway, Dunmurry
Belfast, BT17 9AF
T: +44 (0) 28 9862 1750
F: +44 (0) 28 9862 1750

Gas Bottle: CO2/N2
Type: 3.5 lb
Tare weight: 3.6 kg
Total Weight: 5.1 kg
Serial No. 653560

The liferaft was removed from the transport protection bag. The liferaft was inspected before being inflated with no obvious signs of damage being observed.

The liferaft was inflated using a shop airline. The liferaft was again examined with the only observation being that the pressure relief valve (PRV) to the lower buoyancy tube failed to reseal. This PRV issue was considered not to be the reason why the liferaft did not fully inflate. No other damage was observed at this stage.

The cylinder and inflation system was inspected. The cylinder showed signs of what was considered to be significant corrosion. It was also noted that the cylinder had not been hydrostatically tested since 1999. The cylinder is required to be hydrostatically tested every 5 years. Premium Liferaft Services assured us that the cylinder had been checked weighed at the last service in January 2007. However this check is not recorded by Premium Liferaft Services. ML Lifeguard Service Manuals for this raft state that cylinder check weights should be recorded. The Kidde type operating head was examined and it had appeared to function properly.



The cylinder was separately tested for leaks. Some water was removed in the cylinder before being pressurised with Carbon Dioxide.

The test was conducted using 25ml of a Carbon Dioxide chemical detection fluid. The detection fluid is initially intense pink in colour. The detection fluid (25ml) was placed in a plastic bag and secured around the neck of the cylinder.

The bag was left in position for 1 hour. At the end of this period, the test fluid was seen to be completely colourless. This indicated that at least 0.0022g of Carbon dioxide had escaped. The cylinder was then immersed in water to locate the point of leakage. No leakage point could be observed which indicates that the leak is extremely small.


The liferaft was then subjected to a one hour air-holding test. The bottom buoyancy failed the airholding test though the failure was considered not to be the reason why the liferaft only partially inflated. It should be noted that the liferaft is subject to an airholding test at each annual service. However Premium Liferaft Services advised that no records of the test are retained.

It was also noted that only one half of the container was recovered with the liferaft. No damage to the recovered container half was noted.

Conclusion:

We are still to complete tests on the liferaft hose and hydrosatically test the cylinder. If the tests on the cylinder and the hose show no signs of failure it is our opinion that the partial inflation could be considered to be caused by a cylinder that was leaking.


Witnessed by:

 RFD Beaufort Ltd


Witnessed by:

 MCA

Witnessed by:

 RFD Beaufort Ltd

Witnessed by:

 Premium Liferaft Services

Liferaft maintenance sheet

Web site <http://www.liferafts.com>E-mail: info@liferafts.com

1 of 3.

WITH COMPLIMENTS

M.A.I.B. Southampton

ATTN

- Cat & Servicing record as requested



Liferaft House
Burnham Business Park
Burnham-on-Crouch
Essex CM0 8TE

Tel: Maldon

Fax: Maldon

LIFERAFT LOG CARD

ORDER CONFIRMATION No. 22245		AGENT PLS		OWNER/VESSEL	
LIFERAFT TYPE FORTIES		PERSONS CAPACITY 4 (FOUR)	CATALOGUE No. 3039/1	SERIAL No. 40687	
RIGID CONTAINER	SINGLE FLOOR	PAINTER LENGTH 10 MTS.	SURVIVAL PACK RORC	HYDROSTATIC RELEASE IF FITT TYPE SERIAL No.	
WIDE	INFLATABLE FLOOR				

CYLINDER INFORMATION

CYL REF	TYPE	SERIAL No.	TARE WT. Kg.	GAS	GAS CHARGE Kg.	TOTAL WEIGHT
1	3 1/2 lb	653560	3.60	CO ₂ /N ₂	1.44/0.056	5.10
2						
3						
4						
5						

TECHNICAL PACKER	INSPECTOR	FIRST INSPECTION DUE 7/90
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ANNUAL INSPECTION CERTIFICATE

INSP YEAR	SERVICE STATION	CYL REF	DATE	MODIFICATIONS AND SPECIAL TESTS CARRIED OUT	SURVEYOR	NE INS DU

1317 LIFERAFT LOG CARD

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1 st						
2 nd						
3 rd						
4 th						
5 th						
6 th						
7 th						
8 th						
9 th						
10 th						

PREMIUM LIFERAFT SERVICES

LIFERAFT SERVICING RECORD

Serial NO 40687

Manufacturer: Lifeguard

Raft Type: Old Style Cont.

Pack: RORC

Manufacture date: 1 Jul 1989

1st Service Date: 24 Jul 1990

Flare Change:

Replacements: Torch Cells, R.K.Adhesive,

Additional Work:

2nd Service Date: 1 Jul 1991

Flare Change:

Replacements: Torch Cells, R.K.Adhesive, H/H, A.S.S.Tabs, Flares.

Additional Work:

3rd Service Date: 31 Jul 1992

Flare Change:

Replacements: Torch Cells, R.K.Adhesive,

Additional Work:

4th Service Date: 9 Jul 1993

Flare Change:

Replacements: Torch Cells, R.K.Adhesive,

Additional Work:

5th Service Date: 21 Jul 1994

Flare Change:

Replacements: Torch Cells, R.K.Adhesive, H/H, A.S.S.Tabs, Flares.

Additional Work:

6th Service Date: 23 Aug 1995

Flare Change:

Replacements: Torch Cells, R.K.Adhesive,

Additional Work:

7th Service Date: 8 Nov 1996

Flare Change:

Replacements: Torch Cells, R.K.Adhesive, RB2 Arch light conversion kit fitted, H/H, A.S.S.Tabs,

Additional Work:

8th Service Date: 26 Nov 1997

Flare Change:

Replacements: Torch Cells, R.K.Adhesive,

Additional Work:

9th Service Date: 8 Jan 1999

Flare Change:

Replacements: Torch Cells, R.K.Adhesive, canister repair, a.s.s. tabs, Cylinder required re-test & re-charge so was repl.

Additional Work:

10th Service Date: 3 Feb 2000

Flare Change:

Replacements: Torch Cells, R.K.Adhesive, H/H.

Additional Work:

11th Service Date: 2 May 2001

Flare Change:

Replacements: Torch Cells, R.K.Adhesive, Painter, RB2, Container

Flare Change:
Replacements: Torch Cells, R.K. Adhesive, Painter, RB2, Container
Additional Work:

12th Service Date: 12 Jun 2002

Flare Change:
Replacements: Torch Cells, R.K. Adhesive, H/H.
Additional Work:

PREMIUM LIFERAFT SERVICES

LIFERAFT SERVICING RECORD

Serial NO 40687
Manufacturer: Lifeguard
Raft Type: Old Style Cont.
Pack: RORC
Manufacture date: 1 Jul 1989

13th Service Date: 21 Jan 2003

Flare Change:
Replacements: Torch Cells, R.K. Adhesive,
Additional Work:

14th Service Date: 10 Oct 2003

Flare Change:
Replacements: Torch Cells, R.K. Adhesive, S/S.
Additional Work:

15th Service Date: 17 Jan 2005

Flare Change:
Replacements: Torch Cells, R.K.
Additional Work:

16th Service Date: 26 Jan 2007

Flare Change: 26 Jan 2007
Replacements: TORCH CELLS, ADHESIVE, PAINTER, H/H, S/S.
Additional Work: CHANGED CONTAINER

17th Service Date:

Flare Change:
Replacements:
Additional Work:

(R.K. - Repair Kit, H/H - Hand Held Flares, Paras - Parachute Flares,
A.S.S. Tabs - Anti Seasickness Tablets.)

P.L.S. Servicing Manager

PLRS service technician certificate of approval (RFD Beaufort)



Certificate of Approval

COURSE ATTENDED : Lifeguard Marine Products - Refresher Level

This is to certify that the named individual has successfully completed an RFD Beaufort training course, and is competent to inspect, service, repair and pack the lifesaving equipment specified. The certificate is valid for a period of 3 years and may be withdrawn at the discretion of the awarding manufacturer or local authorities. The certificate is only valid whilst the named individual is employed at the specified Service Station, and whilst that Service Station has a current servicing agreement with the manufacturer.

Trained Employee : [Redacted]

Registered No. : 81182

Date of Issue : 12-Dec-2003

Employed At : Premium Liferaft Services

Liferaft House

Burnham -on-crouch

Essex

CM0 8TE

United Kingdom

Brand	Product Category	Approval	Expires
Lifeguard	Forties Liferaft 4, 6, 8 Person	✓	12-Dec-2006
Lifeguard	Release Hooks	✓	12-Dec-2006
Lifeguard	Rescue Boats	✓	12-Dec-2006

Key: ✓ = Competent = Supervision Only

Training Manager

Instructor

Director

PLRS SOLAS liferaft certificate of re-inspection (Viking)



CERTIFICATE OF RE-INSPECTION

This is to certify that the liferaft detailed below has been surveyed, controlled and tested in compliance with requirements from:

and the manufacturer and in accordance with IMO Resolution:

Inflatable Liferaft

Identification:	Type:	Capacity:	Serial No:	Date of manufacture:
	4DK	4	4DK-R021191	11-91
	Fabric type:	Length of painter:		Max stowage height:
	N/A	26 m/inside	m/outside	13 m

Cylinders:	Serial No:	Contents CO ₂ :	Contents N ₂ :	Latest hyd. test:
	S11770	1.632 KG	0.068 KG	12-99

Equipment:	Unit:	Type:	Serial No:	Expiry date:
Emergency pack:		SOLAS A PACK	4DK-R021191	
EPIRB:				
HRU test:				
Radar reflector:		PAINS WESSEX	1193051	
First aid kit:		BCB	5133	11-02

Tests:	NAP-test:	Gas inflation test:	Floor seam test:	Load test davit-launched:
Yes/no:	NO	Yes/no: YES	Yes/no: YES	Yes/no: NO
Latest test*:		Latest test*:	Latest test*:	Latest test*:

* Latest test date (month/year)

Verification:	Date of inspection:	Servicing station No and name:	Date issued to ship:
	21-08-01	PREMIUM LIFERAFT SERVICES 380	21-08-01
	National Marine authority ID No:	Remarks / modification:	

This inflatable liferaft requires servicing 12 months from the latest inspection date in accordance with the SOLAS regulation.

Flagstate of ship:

IMO No:

International call signal:

Name of ship / owner: ON HIRE FROM:
PREMIUM LIFERAFT SERVICES
LIFERAFT HOUSE
BURNHAM BUSINESS PARK
BURNHAM-ON-CROUCH
ESSEX CMO 8TE

For authorized servicing station (printed name)

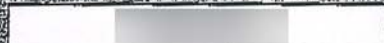
Signature

MCA liferaft service station inspection reports

CONTROL OF INFLATABLE LIFERAFT SERVICE STATIONS

To: 1. Surveyor-in-Charge/AOM

From:



2. Head of Shipping Safety Branch/HO

3. Marine Office

Harwich

Maritime and Coastguard Agency

STANDARD CHECKLIST

Based on the IMO Resolution A 761 (18) - Recommendations on conditions for the approval of servicing stations for inflatable liferafts as set down in DSG Doc 419

Station

Premium Liferaft Services, Burnham on Crouch.

Date of inspection

15 June 2006

Service provider

Viking & Zodiac

ITEM	COMMENTS ON CONDITION	REMARKS												
PREMISES														
Heating/Warmth	Gas hot air blowers for winter	Satisfactory												
Signage for service providers	North facing and translucent	Satisfactory												
Roller door	Roller door - only opened during receipt and delivery.	Satisfactory												
Sodium lights	Sodium lights	Satisfactory												
Floor cleanliness	Smooth cement floor	Satisfactory												
PERSONNEL														
Names & certificates for service providers	<table border="1"> <thead> <tr> <th></th><th>Viking</th><th>Zodiac</th></tr> </thead> <tbody> <tr> <td>Mr A. Wade</td><td>07/2005</td><td>31/05/04</td></tr> <tr> <td>Mr I.D. Baker</td><td>08/2008</td><td>26/05/07</td></tr> <tr> <td>Mr M. Barr</td><td>07/2005</td><td>N/A</td></tr> </tbody> </table>		Viking	Zodiac	Mr A. Wade	07/2005	31/05/04	Mr I.D. Baker	08/2008	26/05/07	Mr M. Barr	07/2005	N/A	Urgent requirement - see remarks
	Viking	Zodiac												
Mr A. Wade	07/2005	31/05/04												
Mr I.D. Baker	08/2008	26/05/07												
Mr M. Barr	07/2005	N/A												
Service Manuals	Viking updated 04/2006 Zodiac updated 02/2006	On computer internet												
Service Records	Paper and electronic	Satisfactory												
Organisation and layout	Large open warehouse with attached office	Satisfactory												
In and Out access for rafts	Through large roller shutter door	Satisfactory												
Inflation air from inside station	Two compressors	Satisfactory												
Suction Pumps/Vacuum Cleaner	Two industrial suction pumps	Satisfactory												
Manometer test and Records Satisfactory	Digitron tested 24/06/05	-Satisfactory												

ITEM	COMMENTS ON CONDITION	REMARKS
STORES Gas Bottles	2 x 12 man, 4 x 14 man and 5 x 6 man	Bottles recharged locally on demand.
Records (Release Notes etc)	Records available in the office and on computer	Satisfactory
Adhesive Dates & Type	Viking Zodiac Both types obtained on demand due to short shelf life	Agreeable due to large stock of service liferafts
Pyrotechnics Dates	Paras Smokes Hand 50 @ 06/10 30 @ 06/10 150 @ 06/10	Satisfactory
Firex Kits Dates	11 @ 08/09	Satisfactory
Repair Kits Dates	Viking 13 @ 11/08 Zodiac 14 @ 06/09	Satisfactory
Food Dates	52 @ 04/10	Satisfactory
Water Dates	39 litres @ 02/11	Satisfactory
Salut Tablets Dates	7 @ 11/09	Satisfactory
Scale Press Date	Tested 12/2005	Satisfactory
Tool Tools, Hinges & Adaptor	Yes	Satisfactory
Marked Hall Board	Yes	Satisfactory
Retumated	No	-
Unpacked Retumated	Yes	-
Type	BFA and LIFEGUARD	Liferafts being re-packed
Serial Numbers	D4/2145 & 3039/2	-
Batch/Manufacture	1994 & 1989	-
Printer Pol	No No	-
Time Boardable	0 seconds	-
Time Arching Up	0 seconds	-
Time Blowing Off	0 seconds	-
Hydraulic Release Units	11 of Hammar dated to 2009	Satisfactory

Additional Comments / Remarks:

The matter of personnel not being able to attending courses for both Viking and Zodiac is a matter of concern. Premium Liferaft Services has one person with current certification. Personnel have been booked to attend various update courses which have been cancelled at short notice. Whilst other courses are then rearranged, these are often promulgated at short notice making attendance difficult. It is important that Premium Liferaft Services continues to try to place members of staff on these courses.

For information: discussion took place with regard to the difficulties of making a seal when replacing the Hammar Auto Inflator that was used on lif jackets but now used on 40 A's and ISAF liferafts.

Issued at

Harwich

Signed

Date

16 June 2006

Name





CONTROL OF INFLATABLE LIFERAFT SERVICE STATIONS

To:- 1. Surveyor-in-Charge /AOM

From

2. Head of Shipping Safety Branch - HQ

Marine Office

Harwich

Maritime and Coastguard Agency

STANDARD CHECKLIST

Based on the IMO Resolution A.761(18) - Recommendations on conditions for the approval of servicing stations for inflatable liferafts as set down in DSG Doc 419

Station

Premium Liferaft Services, Burnham on Crouch.

Date of Inspection

26 October 2006

Service Agent for

Viking & Zodiac

ITEM	COMMENTS ON CONDITION	REMARKS												
PREMISES														
Heating / Ventilation	Gas hot air blowers for winter	Satisfactory												
Skylights etc. screened against UV / sunlight	North facing and translucent	Satisfactory												
Draft Protection	Roller door - only opened during receipt and delivery.	Satisfactory												
Lighting	Sodium lights	Satisfactory												
Cleanliness	Smooth cement floor	Satisfactory												
PERSONNEL														
Names, Certificate No.s & Dates of Issue / Expiry	<table><tr><td></td><td>Viking</td><td>Zodiac</td></tr><tr><td>Mr A. Wade</td><td>07/2005</td><td>31/05/04</td></tr><tr><td>Mr I.D. Baker</td><td>08/2008</td><td>26/05/07</td></tr><tr><td>Mr M. Barr</td><td>07/2005</td><td>N/A</td></tr></table>		Viking	Zodiac	Mr A. Wade	07/2005	31/05/04	Mr I.D. Baker	08/2008	26/05/07	Mr M. Barr	07/2005	N/A	Urgent requirement - see remarks
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Suction Pumps - Vacuum Cleaner	Two Industrial suction pumps	Satisfactory												
Manometer Test and Records Satisfactory	Digitron tested 24/08/05	-Satisfactory												

ITEM	COMMENTS ON CONDITION	REMARKS
STORES Gas Bottles	2 x 4 man, 9 x 6 man, 8 x 12/14 man and 6 x 8 man	Bottles recharged locally on demand.
Records (Release Notes etc.)	Records available in the office and on computer	Satisfactory
Adhesive Dates & Type	Viking Zodiac Both types obtained on demand due to short shelf life	Agreeable due to large stock of service liverafts
Pyrotechnics Dates	Paras Smokes Hand 90 @ 10/09 40 @ 10/09 100 @ 10/09	Satisfactory
First Aid Kits Dates	34 @ 11/09	Satisfactory
Repair Kits Dates	Viking 8 @ 11/08 Zodiac 30 @ 06/09	Satisfactory
Food Dates	72 @ 04/11	Satisfactory
Water Dates	90 litres @ 08/11	Satisfactory
Seasick Tablets Dates	60 @ 07/10	Satisfactory
Scales Test Date	Tested 12/2005	Satisfactory
Ample Tools, Plugs & Adaptor	Yes	Satisfactory
Marked Hall Board	Yes	Satisfactory
Raft Inflated	No	-
Unpacked Raft Inspected	Yes	-
Type	None	SOLAS being re-packed
Serial Number	-	-
Date of Manufacture	-	-
Painter Pull	-	-
Time Boardable	-	-
Arches Up	-	-
Valves Blowing Off	-	-
Hydrostatic Release Units	20 of Hammar dated to 2009	Satisfactory

Additional Comments / Remarks:-

Zodiac & Viking Courses arranged for November and December 2006.

During the past few months PLRS have had 4 x pressure relief valves (A6's all made by Lea Fields) break on on inflation. These are fitted to Lifeguard's, BFA's and Zodiac's. 3 x PRV have broken at flange to stub join and 1 x PRV has blown the centre valve casing outwards. In a required situation, this would lead to complete failure of the liferaft compartment/tube. From the failures that have taken place, the manufacturing date of the raft may be 2001/2. 3 out of the 4 liferafts had been serviced at frequent intervals.

Issued at **Harwich**

Signed

Date **27 October 2006**

Name



PLRS customer owned liferaft servicing report

PREMIUM LIFERAFT SERVICES - LIFERAFT SERVICING REPORT

Liferaft House Burnham Business Park Burnham on Crouch Essex CM0 8TE Tel: 01621-784858 Fax 01621 785934

Owner : 			Inspection Certificate No 07/044	
Manufacturer: LIFEGUARD	Size & Type: 8 Pers FORTIES	Container	Pack: R.O.R.C.	Serial No. 80025
Date of Manufacture: 09/1998	Last serviced by & Date: Premium Liferafts 03/2006		Service Date: 16/03/2007	Next Service Due: 03/2008

Pressure Tests	Relief Valves		Time		Start		End	
	Open	Closed	Start	End	Pressure	Temp.	Pressure	Temp.
Upr Buoyancy	70.00	61.50	08.50	09.50	61.50	17°C	60.00	17°C
Lr Buoyancy	75.00	61.50	08.50	09.50	61.50	17°C	60.00	17°C
Floor	***	***	09.05	09.50	12.00	17°C	8.00	17°C

CYLINDER DETAILS				EMERGENCY PACK(S)	Pass	Replace (No)
Cylinder No.	0188673			Basic Pack		
CO ₂ Weight	2.780			Bailer	✓	
N ₂ Weight	0.070			Bellows	✓	
Tare Weight	8.274			Paddles	✓	
Full Weight	11.124			Repair Kit	✓	Adhesive
Test & Refurbish	19/01/2005			Sponges	✓	
Last Hydrostatic Test	19/01/2005			Leak Stoppers	✓	
Next test due	01/2010			Instructions Card	✓	
INFLATION SYSTEM	Pass	Fail	See Com.	SOLAS No.2 Signals Card	✓	
Operating Head	✓			Pack Bag.	✓	
Operating Head Cover	✓			R.O.R.C. Pack		
Firing Line	✓			Hand Held Flares (3)	✓	
Conduit	✓			Anti-Seasickness Tablets	✓	
Red Safety cap	N/A			Signalling Torch	✓	4 Batteries
High Pressure Hose	✓			Offshore E Pack		
'O' Rings	N/A			Parachute Flares (2)		
Inlet valves & P.R.V's.	✓			Spare Torch Batteries & Bulb		
Top up valves	✓			First Aid Kit		
HULL & EQUIPMENT				Drinking Water		
Upper Buoyancy	✓			Graduated Beaker		
Lower Buoyancy	✓			Additional Equipment		
Arch	✓					
Floor	✓					
Life line & patches (int)	✓					
Lifeline & patches (ext)	✓					
Righting Strap	✓			Valise	Pass	Fail
Boarding Ladder	✓			Fabric	N/A	See Com.
Painter & Patch	✓			Handles	N/A	
Drogue & Patch	✓			Painter Storage	N/A	
Quoit & Line	✓			Container		
Safety Knife & patch	✓		✓	Gasket	✓	
Cylinder Pocket	✓			Tape	N/A	
Water Ballast Pockets	✓			Bursting Bands / Lashing Strap	✓	
Canopy & Entrance	✓			Painter Storage	✓	
Retro Reflective Tape	✓			Labels	✓	
Rainwater collector	✓			Vacuum/Hermetic Pack.		
Arch Light (internal)	✓			Vacuum/hermetic Bag	N/A	
Arch Light (external)	✓			Sealing Strip	N/A	
Arch Light Batteries	✓					
Deflation Plug	✓			PLEASE TURN OVER FOR GENERAL COMMENTS.		

ISAF offshore special regulations liferaft requirements

APPENDIX A part II

Appendix A does not cover liferafts intended for category 0 races

The ISAF liferaft

The ISAF liferaft specification (OSR Appendix A part II) was published in 2002 pending completion of ISO standard 9650 and served the offshore community well.

As ISO 9650 is now widely available ISAF is following previously-established policy to promote the ISO standard as its primary reference. It is the intention of ISAF that the ISAF specification will continue to be an acceptable alternative although manufacturers may choose to no longer market products under the ISAF name. The complete ISAF liferaft specification is at www.sailing.org/specialregs

Please refer to the text of Special Regulations for further details.

Chairman Special Regulations Liferaft Working Party
November 2007

ISAF OFFSHORE SPECIAL REGULATIONS

	Category
contain at least a SOLAS "A" pack.	
4.20.2 Liferaft(s) shall be provided capable of carrying the whole crew when each liferaft shall comply with either:-	MoMu1,2
a) OSR 4.20.1 (b) (SOLAS), or	MoMu1,2
b) for liferafts manufactured prior to January 2003, OSR Appendix A part I (ORC), or	MoMu1,2
c) OSR Appendix A part II (ISAF) when, unless otherwise specified by a race organizer, the floor shall include thermal insulation, or	MoMu1,2
d) ISO 9650 Part I Type I Group A (ISO) when each liferaft shall contain at least a Pack 2 (<24h) and-	MoMu1,2
i) shall have a semi-rigid boarding ramp, and	MoMu1,2
ii) shall be so arranged that any high-pressure hose shall not impede the boarding process, and	MoMu1,2
iii) shall have a topping-up means provided for any inflatable boarding ramp, and	MoMu1,2
iv) when the liferaft is designed with a single ballast pocket this shall be accepted provided the liferaft otherwise complies with ISO 9650 and meets a suitable test of ballast pocket strength devised by the manufacturer and	MoMu1,2
v) compliance with OSR 4.20.2 (d) i-iv shall be indicated on the liferaft certificate.	MoMu1,2
4.20.3 Liferaft Packing and Stowage	MoMu0,1,2
A Liferaft shall be either:-	MoMu0,1,2
a) packed in a transportable rigid container or canister and stowed on the working deck or in the cockpit, or:-	MoMu0,1,2
b) packed in a transportable rigid container or canister or in a valise and stowed in a purpose-built rigid compartment containing liferaft(s) only and opening into or adjacent to the cockpit or working deck, or through a transom, provided that:-	MoMu0,1,2
i) each compartment is watertight or self-draining (self-draining compartments will be counted as part of the cockpit volume except when entirely above working deck level or when draining independently overboard	MoMu0,1,2