Certificate No: LR22424315SS
Issue Date: 04/10/2022
Expiry Date: 03/10/2027

Certificate of Type Approval

This is to certify that the product detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations and with the International Convention for the Safety of Life at Sea, (SOLAS), 1974, as amended, for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

Manufacturer	**Survitec Group Ltd**
Address	Kingsway, Dunmurry, Belfast, BT17 9AF, Northern Ireland
Type	Liferafts
Description	6 person, 8 person, 10 person, 12 person, 16 person, 20 person, 25 person throw-over / roll-over canopied Surviva MkIV inflatable liferaft hull.
Trade Name	'RFD Endura R' (also known as 'Survitec ESR', 'DSB LR07E', 'Survitec Zodiac ESP', 'Crewsaver ESR' & 'Elliot ESR').
Specified Standard	IMO Resolution MSC.81 (70) Part 1 as amended. MSC.1/Circ.1328. Resolution MSC.385(94).

This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

The attached Design Appraisal Document forms part of this certificate.

This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.

Lijo Thomas

Lijo Thomas

Senior Surveyor to Lloyd's Register EMEA
A member of the Lloyd's Register group

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

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The undernoted documents have been appraised for compliance with the relevant requirements of International Conventions, and this Design Appraisal Document forms part of the Certificate.

This Design Appraisal Document forms part of the Certificate.

This Certificate is a Renewal of Certificate Number SAS S170081-M2-04

APPROVAL DOCUMENTATION

Design Change Sheet No 0023, regarding the introduction of New Humidity sensor (for compliance with IMO MSC.1/Circ.1328) on Liferafts Endura range.

Design Change Sheet No 9968 regarding the introduction of Thanner DK99 as an alternative Inflation System on Marine MK4 SOLAS liferafts.

Design Change Sheet No 0110 regarding the introduction of a new Daniamant RL6 lighting system as an alternative lighting system on Marine MK4 SOLAS liferafts.

TEST REPORTS

- Hot Inflation Test of RFD Endura MK4 25 Person davit launched and 6 person throw over liferaft completed with Leafield (GIST), report no. 24/07, dated 07.09.07.
- Cold Inflation Test Endura (using Surviva MK4 hull), scompleted with Leafield (GIST), report no. 25/07, dated 11.09.07.
- DSB LR97, 25 persons Righting Test, report No. 027/07 completed on 09.08.07.
- Series of MSC/Circ. 980 test reports completed to demonstrate compliance with Resolution MSC.295 (87) and MSC.274 (85), dated 22.04.2010 to 03.03.2011, witnessed by a Lloyd's Register surveyor.
- Series of MSC.1/Circ. 1328 test reports completed to demonstrate compliance with requirements stated under MSC.1/Circ. 1328, as witnessed by a Lloyd's Register surveyor and detailed in the Marine Report No: 2012-051.
- Marine Report No 77/12, 46m Drop Test report as witnessed by a LR surveyor, dated 29.11.12.
- Marine Report No 01/13 dated 29.11.2012 (Drop test report as witnessed by a LR surveyor).
- Marine Report No 02/13 dated 07.11.2012 (Cold Inflation test report as witnessed by a LR surveyor).
- Marine Report No 03/13 dated 07.11.2012 (Cold Inflation test report as witnessed by a LR surveyor).
- Liferaft towing test, test report No:1424176/LIV, dated 21 November 2014

TEST REPORTS FOR POLAR SERVICE QUALIFICATION

- Test of cold protection device, Polar Box used in conjunction with Hammar Release Unit, Test report BE 030-1/2017, dated 10/11/2017
- Seating space test report BE 033/2017, dated 15/11/2017

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- Seating space test report BE 034/2017, dated 15/11/2017
- Ice test on liferaft, Power Blanket and Hammar Polar Boxes, test report BE 042/2017, dated 10/11/2017
- Vibration test of Power Blanket, test report BE 043/2017, dated 12/07/2017
- Inflation test after exposure to -700C for 50 hours, Model Liferaft 25 TO PA ESR, test report BE 051/2017, dated 15/11/2017
- Inflation test after exposure to -700C for 50 hours, Model 25 TO SR PA and 35 TO PA ESR, test report BE 052/2017, dated 05/11/2017
- Inflation test after exposure to -700C for 50 hours, Model 100 TO SR V PA, test report BE 053/2017, dated 15/11/2017
- Inflation test after exposure to -700C for 50 hours, Model 6 TO PA and Model 6 TO PA ESR, test report BE 054/2017, dated 07/11/2017
- Seam Tensile Tests on conditioned samples at -700 C for 120 hours, Certificate No:LIV 1700975/01, dated 05 January 2018 endorsing Marine Test Report TR2018-003, dated 29/01/2018
- Solid surface landing test, Model 100 TO SRV PA Survitec Zodiac, test report BE 056/2017, dated 06/12/2017

CONDITIONS OF CERTIFICATION

Polar Service Conditions

1. Cold inflation test temperature: -70^0 C.
2. Hydrostatic release unit: HAMMAR H20 Polar Box.
3. Minimum expected time of rescue: 5 days.
4. Liferaft capacity to accommodate personal in suitable polar clothing and additional polar survival equipment:

Normal Application Capacity	6	8	10	12	16	20	25
Polar Application Capacity	4	6	8	9	12	16	20

5. Operational assessment should be carried out to assess the contents of the Personal and Group Survival Kits, for the intended route. The parent vessel should be provided with personal and group survival kits for 110% of persons on board and stowed at an easily accessible location as required for the expected time of rescue as determined by the operational assessment. While determining the contents of both personal and group survival equipment, the sample list of items in paragraph 9.1 and 9.2 of MSC Circ.385(94) PART I-B shall be supplied as the minimum content of the kit.
6. Embarkation arrangement such as embarkation ladders used in conjunction with polar liferafts shall provide safe abandonment of ship, taking into consideration the possible adverse environmental conditions during an emergency. The embarkation ladder used in conjunction with liferafts shall be kept free of ice.
7. Blanket heating is to be connected to the emergency switch board.
8. Adequate emergency rations shall be provided, for the maximum expected time of rescue as determined by the operational assessment.
9. Liferaft shall be equipped with EPIRB and radio communication devices with battery capacity and life for maximum expected time of rescue as required by paragraph 10.2.2.2 of Polar Code.

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10. Position indicating lights and internal reading lights should have a battery capacity and life for maximum expected time of rescue.

11. Liferaft used in Polar service shall be serviced at intervals of 12 months.

Normal Service Conditions

12. Liferaft specifications

Liferaft type	SoLaS E-Pack	RFD Containers				Stowed Weight (KG)	Stowed Height (M)
		Mk10 Size	Mk14 Size	Mk20 Size	TYPE 35 Size		
6TO	A	4				80	46
	B	3				61	46
	A		12			80	46
	B		12			61	46
8TO	A	4				84	46
	B	3				61	46
10TO	A	6				104	46
	B	4				84	46
	A		14			103	46
12TO	A	6				113	46
	B	4				89	46
	A		14			112	46
	B		14			83	46
16TO	A	7				141	46
	B	6				107	46
	A		14			148	46
	B		14			105	46
	A		17			143	46
20TO	A	9				162	46
	B	7				113	46
	A		17			164	46
	B		14			110	46
25TO	A	9				182	46
	B	9				132	46
	A		17			184	46
	B		17			134	46

**This SOLAS A Pack Configuration should provide additional 5% of fresh water for each person the liferaft is permitted to accommodate (i.e., total minimum 1.875 litres in excess).*

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	Liferaft Type						
	6TO	8TO	10TO	12TO	16TO	20TO	25TO
Towing force @ 2 Knots (KN)	0.72	0.65	0.88	0.8	0.87	0.78	0.92
Towing force @ 3 Knots (KN)	1.23	1.5	1.55	1.79	2.06	1.5	3.04

Configuration: The Liferafts consist of a complete standard SOLAS and EC MED approved davit launched liferaft hermetically sealed within a moisture-controlled envelope. The status of the atmosphere within the envelope can be verified at any time. The liferafts include means to evaluate the humidity level behind the protective barrier and to detect any leakage of inflation gas during the annual onboard inspection in accordance with MSC.1/Circ. 1328

13. **Operating head inflation system:-**

    i. Manufacturer: Leafield Marine Limited

    Type: GIST (to be used only with PD 11401 & ARCTIC-04 hose)

    ii. Manufacturer: Thanner & Co A/S

    Type: DK 99 series

14. The liferaft's container shall be marked as required by the LSA Code Regulation IV/4.2.6.3 with the maker's name or trademark, serial number, approving authority, number of persons it is approved to carry, SOLAS, the type of emergency pack enclosed, date when last serviced, length of painter, maximum stowage height and launching instructions.

15. The liferaft shall be marked as required by the LSA Code Regulation IV/4.2.7.1 with the maker's name or trademark, serial number, date of manufacture, approving authority, name and place of last servicing station, and the number of persons it is approved to carry.

16. Provision shall be made for marking each liferaft as required by the LSA Code Regulation IV/4.2.7.2 with the name and port of registry of the ship to which the liferaft is supplied, in such a form that the ship identification can be changed at any time without opening the container.

17. This type of liferaft is designed to be serviced at extended intervals not exceeding 30 months which shall continue for the service life of the product as long as the hermetic seal has not been compromised. The application of the 30 months service interval shall be pursuant to conditions of MCA letter MS 67/11/6 dated 23 May 2016, and being subject to the acceptance of the vessel's Marine Administration

18. The service of the liferaft is to be undertaken at a Lloyd's Register approved or Flag Administration approved Service station duly authorised and appointed by the manufacturer subject to the following conditions:

    – The hermetic seal verification shall be performed on board at intervals not exceeding 12 months from the last service or onboard inspection, in accordance with MSC.1/Circ. 1328 and the manufacturer's instructions by personnel trained and certificated by the liferaft manufacturer.

    – The supplied Log Card should be completed with the person's Certificate of Competence number and the container label then being indelibly updated to display the date of the next annual inspection.

19. The liferaft shall be fitted with a label containing the text "The liferaft is permitted for extended service interval of 30 months if serviced at an approved service station" and "The Liferaft must be inspected on board at intervals not exceeding 12 months by a person certified for such purpose by Survitec Group".

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20. Detailed instructions for use, maintenance, and installation of the liferaft complying with SOLAS Regulations III/35 and 36 and also instructions for use and maintenance of the liferaft equipment shall be provided to each purchaser and be available on board. The liferaft and its equipment shall be kept in good working order at all times and checked at regular intervals according to the manufacturer's instructions and SOLAS requirements.

21. Retro-reflective materials, position-indicating lights and the equipment carried on board the liferaft as required by LSA Code Regulations IV/4.1.5 and 4.2.9 are to be approved type.

22. Installation on board: The on-board arrangements and installation of the liferaft, including launching of liferaft on ice are not part of this design appraisal or certificate. All such arrangements are to be to the satisfaction of the Surveyors attending on board.

23. If the specified standards are amended during the validity of this certificate, this product type is to be re-approved prior to it being supplied to vessels to which the amended standards apply.

24. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure compliance with SOLAS Regulation III/5.

25. Production tests are to be conducted in accordance with the applicable requirements of IMO Resolution MSC.81 (70), Part 2 and each item, batch, or lot be delivered with an LR Certificate of SOLAS Production Testing issued by the attending LR Surveyors following their witness of the tests. This does not preclude any further testing to additional requirements of the Marine Administration of the country where the ship is registered (i.e., the flag state) or those acting on behalf of that Administration.

26. Should a change of Place of Production from that stated on the application form be required, i.e., where the stages of manufacture/assembly/testing of this product takes place, the new Place of Production is to be advised to us prior to the change taking place. This updated notification about the Place of Production is required for this Approval to be maintained.

Lijo Thomas
Senior Specialist
Fire & Safety, Statutory Discipline Team
UK&I Technical Support Office, Marine & Offshore
Lloyd's Register EMEA

Supplementary Type Approval Terms and Conditions

This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s)

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