



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

Address Kingsway
Dunmurry
Belfast, BT17 9AF

Product Type LIFERAFTS

Product Description 6 persons, 8 persons, 10 persons, 12 persons, 16 persons, 20 persons, 25 persons capacity throw or roll-overboard canopied inflatable liferafts - Type: "RFD Surviva MKIV" (also known as Beaufort Seafarer, DSB LR07, EV Solas Silver, EV TO M10, Crewsaver, Elliot, Survitec Zodiac and DBC)

Specified Standard IMO Resolution MSC.81 (70) Part 1 as amended by Resolution MSC.295 (87), Resolution MSC.274 (85), Resolution MSC.226 (82) and Resolution MSC.323 (89)

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.

Date of issue 27 January 2016

Expiry date 25 November 2017

Certificate No. SAS S120099/M4

Signed

Sheet No 1 of 8

Name

L. Thomas
Surveyor to Lloyd's Register EMEA
A Member of the Lloyd's Register Group

Note:

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 of any modification or changes to the equipment in order to obtain a valid certificate.

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



Page 2 of 8
Document number SAS S120099/M4
Issue number 1

DESIGN APPRAISAL DOCUMENT

Date 27 January 2016	Quote this reference on all future communications MTES/SFS/TA/LT/WP24266008
-------------------------	--

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS S120099/M4

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.

EXAMINED DOCUMENTATION

- Liferaft Approval data issued by Lloyd's Register
- LR Certificate No.: SAS S070148/M2, SAS S070149/M2, SAS S070150/M2, SAS S070156/M2, SAS S070157/M2, SAS S070158/M2, SAS S070159/M2, SAS S100002/M2, SAS S100001/M2, SAS S100003/M2, SAS S100004/M2, SAS S100005/M1, SAS S100006/M1, SAS S100007/M1
- EC Module B Certificate No.: MED 0750276/M2, MED 0750257/M2, MED 0750258/M2, MED 0750270/M2, MED 0750271/M2, MED 0750272/M2, MED 0750273/M2, MED 1050002/M2, MED 1050003/M2, MED 1050004/M2, MED 1050005/M2, MED 1050006/M1, MED 1050007/M1, MED 1050008/M1.
- DCS 9701 "PU coated structural fabric p/n. 10772009, RFD Spec. 1015 Type 1 (single sided)" issued on 19.09.11
- DCS 9968 "Thanner DK99 Inflation system" issued on 20.06.12
- DCS 9323 "Bostik 6530" issued on 30.03.10
- DCS 0110 regarding the introduction of a new Daniamant RL6 lighting system as an alternative lighting system on Marine MK4 SOLAS liferafts

<u>Drawing No.</u>	<u>Rev. No.</u>	<u>Date</u>	<u>Drawing Title</u>
D50863	2	07.08.07	Surviva Mk4 25-Persons Liferaft
22540-01/02/03	2	02.07.07	General Arrangement (3 drawings)
DCS 8920	-	08.09.08	RFD Surviva MkIV range Marine Liferafts: USCG Compliant
D50857	2	07.08.07	Surviva MK4 6-Persons Liferaft
20638-01/02	2	17-23.06.07	General Arrangement (2 drawings)
15-03.45	F	08.07.05	Container size 4 type 4 and 5 with cradle lashing strap and hydrostatic release unit.
D50858	1	07.08.07	Surviva MK4 8 Persons
20837-01/02	2	09.07.07	General Arrangement
D50859	1	07.08.07	Surviva MK4 10-Persons Liferaft
21022-01/02/03	2	10.07.07	General Arrangement (3 drawings)
D50860	1	07.08.07	Surviva MK4 12-Persons Liferaft
21236-01/02	2	01.07.07	General Arrangement (3 drawings)
D50861	2	07.08.07	Surviva Mk4 16-Persons Liferaft
21639-01/02/03	2	25.06.07	General Arrangement (3 drawings)
D50862	1	07.08.07	Surviva Mk4 20-Persons Liferaft.
22053-01/02	2	18.07.07	General Arrangement (2 drawings)
99991577	-	31.08.10	Fibre glass container model EV-VTRF03
99991578	-	31.08.10	Fibre glass container model EV-VTRF03
99991575	-	31.08.10	Fibre glass container model EV-VTRF03
99991574	-	31.08.10	Fibre glass container model EV-VTRF03



Page	3 of 8
Document number	SAS S120099/M4
Issue number	1

DESIGN APPRAISAL DOCUMENT

Date 27 January 2016	Quote this reference on all future communications MTES/SFS/TA/LT/WP24266008
-------------------------	--

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS S120099/M4

TEST REPORTS

- DSB Test Report for LR 97 8 person date completed 17 October 1997
- Series of tests completed for DSB LR 97 Liferafts carried out between 5 February 1997 and 6 June 1997
- DSB LR97, 25 persons Righting Test, report No. 027/07 completed on 9 August 2007
- Series of MSC/Circ. 980 test reports completed to demonstrate compliance with Resolution MSC.295 (87) and MSC.274 (85), dated 22 April 2010 to 3 March 2011, witnessed by a Lloyd's Register surveyor
- DSB Test Report for LR 97 6 person date completed 17 October 1997
- DSB LR 97, 6 Person Liferaft drop test, completed on 9 December 1998, witnessed by surveyor acceptable to Lloyds Register
- Weight test of RFD Surviva MKIV liferafts packed in MK 16/size 2 type containers, report No 26/2009, dated 25 March 2009
- 18m Drop test of RFD Surviva MK 4 liferafts packed in MK 16/size 2 type containers, report No 23/2009, dated 12 March 2009
- DSB LR 97, 16 Persons Liferaft drop test and weight test completed on 9 December 1999, witnessed by surveyor acceptable to Lloyds Register
- RFD Test Report No. 10/10, dated 7 April 2010. 18m Drop test of RFD Surviva Mk4 liferafts packed in eurovinil type containers
- RFD Test Report No. 16/10, dated 26 August 2010. Weight test of RFD Surviva Mk4 liferafts, 6, 8, 10 and 12 person liferafts packed in E.V. containers
- DSB LR97, 6 and 16 Persons Liferaft drop test, completed on 9 December 1998 and 10 December 1999 witnessed by surveyor acceptable to Lloyds Register
- 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)
- Marine Report No 01/13 dated 29.11.12 (Drop test from 46 meters report as witnessed by a LR surveyor)

Liferafts Fitted with TPED Compliant Cylinders

- 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 7 September 2007
- Cold Inflation Test Endura (using Surviva MK4 hull), completed with Leafield (GIST), report no. 25/07, dated 11 September 2007



Page 4 of 8
Document number SAS S120099/M4
Issue number 1

DESIGN APPRAISAL DOCUMENT

Date 27 January 2016	Quote this reference on all future communications MTES/SFS/TA/LT/WP24266008
-------------------------	--

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS S120099/M4

Qualifying Test for Leaffield GIST Inflation System

Liferafts fitted with US DOT Compliant Cylinders
DCS 8920

Report No.	Date	Description
07/08	01.08.08	Hot Inflation (Leaffield GIST)
02/08	14.04.08	Cold Inflation (Leaffield GIST)
14/08	14.07.08	36m Drop Test (Leaffield GIST)
39/08	04.08.08	46m Drop Test (Leaffield GIST)
06/08	23.04.08	Ambient Inflation / Painter Pull Force (Leaffield GIST)

"Qualifying Tests for Thanner Compact Inflation System" & "Liferafts fitted with TPED Compliant Cylinders"

Report No.	Date	Description
16/08	09.06.08	36m Drop test (c/w Thanner Mk6 Inlet Valve & Thanner DK99 Short Operating Head)
18/08	04.06.08	Cold Inflation (c/w Thanner Mk6 Inlet Valve & Thanner DK99 Short Operating Head)
19/08	05.06.08	Hot Inflation (c/w Thanner Mk6 Inlet Valve & Thanner DK99 Short Operating Head)

TECHNICAL CRITERIA

Liferaft Capacity	SoLaS E-Pack	RFD Containers				DSB Containers				EUROVINIL	Weight (Kg)	Drop Height (m)	Laden Weight (Kg)
		Mk10 Size	Mk14 Size	Mk18 Size	Mk16 Size	Mk20 F Size	Series	N Series	Other	Other			
6TO	A	4									76	46	571
	B	3									57	46	552
	A		12								76	46	571
	B		12								57	46	552
	A			3							76	18	571
	B			1							57	18	552
	A						6/8F				87	36	582
	B							4N			63	36	558
	B								Size 4 Type 4		75	8	570
	A									99991577	66	18	561
B									99991578	53	18	548	
8TO	A	4									80	46	740
	B	3									57	46	717
	A			3							86	18	746
	B			3							62	18	722
	A						6/8F				91	36	751
	B							4N			63	36	723
	B								Size 4 Type 5		84	8	744
	A									99991576	75	18	735



Lloyd's
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Page 5 of 8
Document number SAS S120099/M4
Issue number 1

DESIGN APPRAISAL DOCUMENT

Date 27 January 2016	Quote this reference on all future communications MTES/SFS/TA/LT/WP24266008
-------------------------	--

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS S120099/M4

	B								99991578	53	18	548
10TO	A	6								100	46	925
	B	4								80	46	905
	B		14							74	46	899
	A		14							99	46	924
	A				2					101	18	926
	B				2					85	18	910
	A						10/12F			111	36	936
	B						6/8F			91	36	916
	A								99991574	94	18	919
	B								99991575	76	18	901
12TO	A	6								109	46	1099
	B	4								85	46	1075
	A		14							108	46	1098
	B		14							79	46	1069
	A				2					110	18	1100
	B				2					90	18	1080
	A						10/12F			120	36	1110
	B						6/8F			96	36	1086
	A								99991574	103	18	1093
	B								99991575	81	18	1071
16TO	A	7								137	46	1457
	B	6								103	46	1423
	A		14							144	46	1464
	B		14							101	46	1421
	A		17							139	46	1459
	A						16F			149	36	1469
	B						10/12F			114	36	1434
	B							Size 16 Type 5		78	8	1398
20TO	A	9								158	46	1808
	B	7								109	46	1759
	A		17							160	46	1810
	B		14							106	46	1756
	A						25F			160	36	1810
	B						10/12F			118	36	1768
	A	9								178	46	2241
25TO	B	9								128	46	2191
	A		17							180	46	2243
	B		17							130	46	2193
	A						25F			180	36	2243
	B						16/20F			141	36	2204



Page 6 of 8
Document number SAS S120099/M4
Issue number 1

DESIGN APPRAISAL DOCUMENT

Date 27 January 2016	Quote this reference on all future communications MTES/SFS/TA/LT/WP24266008
-------------------------	--

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS S120099/M4

Towing Forces

	6TO	8TO	10TO	12TO	16TO	20TO	25TO
Towing Force @ 2 Knots (kN)	0.72	0.65	0.88	0.8	0.87	0.78	1.3
Towing Force @ 3 Knots (kN)	1.23	1.5	1.55	1.79	2.06	1.5	2.59

CONDITIONS OF CERTIFICATION

- Lloyd's Register's acceptance for the MkIV range of liferafts to be fitted with US DOT approved cylinders is subjected to relevant USCG Approval Certification remaining valid
- Operating head inflation system:**
 - Manufacturer: Leafield Marine Limited
Type: GIST (to be used only with PD 11401& ARCTIC-04 hose)
 - Manufacturer: Thanner & Co A/S
Type: DK 99 series
- The liferaft's container shall be marked as required by the LSA Code Regulation IV/4.2.6.3 with the marker's name or trade mark, 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. In addition, containers of liferafts carried on ro-ro passenger ships fitted with a radar transponder shall be clearly marked
- 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
- 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 in accordance with the Marine Equipment Directive 96/98/EC, as amended, or by the Marine Administration of the country where the ship is registered (i.e. the flag state) or those acting on behalf of that Administration, as applicable
- The liferaft shall be marked as required by the LSA Code Regulation IV/4.2.7.1 with the maker's name or trade mark, serial number, date of manufacture, approving authority, name and place of last servicing station, and the number of persons it is approved to carry
- Installation on board:** The on board arrangements and installation of the liferaft are not part of this design appraisal or certificate. All such arrangements are to be to the satisfaction of the Surveyors attending on board
- 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



Page	7 of 8
Document number	SAS S120099/M4
Issue number	1

DESIGN APPRAISAL DOCUMENT

Date 27 January 2016	Quote this reference on all future communications MTES/SFS/TA/LT/WP24266008
-------------------------	--

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS S120099/M4

9. Clear operating instructions shall be provided with a suitably worded warning notice using colour coding, pictograms and/or symbols as necessary for clarity. Fully detailed Operations and Maintenance Manuals shall be supplied with each hook or hook system for compliance with SOLAS Regulations III/35/36 and paragraph 2.2.1.3 - 2.2.1.4 of Transport Canada Procedures for Approval of Lifesaving Appliances and Fire Safety Systems, Equipment & Products (TP 146212E - 05/2011)
10. 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
11. 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
12. 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
13. Should a change of Place of Production from that stated below be required i.e. where the stages of manufacture/assembly/testing of this product take place, the new Place of Production is to be advised to us prior to the change taking place. This Certificate will require to be updated for Approval to be maintained



Lloyd's
Register

Lloyd's Register EMEA

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Page 8 of 8
Document number SAS S120099/M4
Issue number 1

DESIGN APPRAISAL DOCUMENT

Date 27 January 2016	Quote this reference on all future communications MTES/SFS/TA/LT/WP24266008
-------------------------	--

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS S120099/M4

PLACES OF PRODUCTION

Survitec Group,
DBC Marine Safety Systems LTD,
1689 Cliveden Ave,
Delta,
BC,
V3M 6V5,
Canada

Survitec Group
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Survitec Group
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Lijo Thomas
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Statutory Fire & Safety
Marine Technology and Engineering Services
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).