

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Automatic self-righting liferafts

with type designation(s)

6DKS, 6DKS S30, 6DKS E
8DKS, 8DKS S30, 8DKS E
10DKS, 10DKS S30, 10DKS E
12DKS, 12DKS S30, 12DKSN, 12DKSN S30, 12DKS E
20DKS, 20DKS S30, 20DKS E
16DKS, 16DKS S30, 16DKSN, 16DKSN S30, 16DKS E
25DKS, 25DKS S30, 25DKSN, 25DKSN S30, 25DKS E
35 DKS, 35 DKS S30, 35 DKS E
39DKS, 39DKS S30, 39DKSN, 39DKSN S30, 39DKS E, 39DKSN E
50DKS, 50DKS S30, 50DKS E, 50DKS VENOC, 50 DKS (35) RS
100DKS, 100DKS S30, 100DKS E, 100DKS VENOC, 100 DKSU, 100DKS SBS, 100 DKS VEMC S30, 100 DKS VEMS, 100DKS VES, 100DKS VEC, 100DKS VEC+, 100DKS VEC+ S30, 100 DKS ADD
150DKS, 150DKS S30, 150DKS E, 150DKS SBS, 150DKSU, 150DKS VEDS, 150 DKS VEMC, 150 DKS VEDC, 150 DKS VEL

Issued to

Viking Life-Saving Equipment A/S
Esbjerg V, Denmark

is found to comply with

SOLAS 74 as amended, Regulation III/4, III/26.2, III/34. IMO Res. MSC 48(66) - Lifesaving Appliance Code.
Tested to IMO Res. MSC 81(70).
TP14475E Ed.1 (2010-03) Canadian life saving appliance standard

Application :

This certificate is recognized by Transport Canada.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2023-02-15**

This Certificate is valid until **2028-02-14**.

for **DNV**

DNV local unit: **Denmark CMC**

Approval Engineer: **Tessa Biever**

Jowita Permoda
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Automatic self-righting inflatable liferaft with the following type designations:

- 6DKS, 6DKS S30, 6DKS E
- 8DKS, 8DKS S30, 8DKS E
- 10DKS, 10DKS S30, 10DKS E
- 12DKS, 12DKS S30, 12DKSN, 12DKSN S30, 12DKS E
- 20DKS, 20DKS S30, 20DKS E
- 16DKS, 16DKS S30, 16DKSN, 16DKSN S30, 16DKS E
- 25DKS, 25DKS S30, 25DKSN, 25DKSN S30, 25DKS E
- 35 DKS, 35 DKS S30, 35 DKS E
- 39DKS, 39DKS S30, 39DKSN, 39DKSN S30, 39DKS E, 39DKSN E
- 50DKS, 50DKS S30, 50DKS E, 50DKS VENOC, 50 DKS (35) RS
- 100DKS, 100DKS S30, 100DKS E, 100DKS VENOC, 100 DKSU, 100DKS SBS, 100 DKS VEMC S30, 100 DKS VEMS, 100DKS VES, 100DKS VEC, 100DKS VEC+, 100DKS VEC+ S30, 100 DKS ADD
- 150DKS, 150DKS S30, 150DKS E, 150DKS SBS, 150DKSU, 150DKS VEDS, 150 DKS VEMC, 150 DKS VEDC, 150 DKS VEL

See Appendix 1 for description of the several features added on to the existing type approved base raft.

The design assessment is based on IMO Res. MSC.48(66) as amended including IMO Res. MSC.293(87) and Canadian Lifesaving Appliance Standard TP 14475E, Ch. IV §4.1 and §4.2 and Lifesaving equipment regulations C.R.C.1436 Schedule VIII.

Liferaft designs with type designation including S30 comply also with MSC.1/Circ.1328 (extended service intervals).

Application/Limitation

For max. capacity and max. installation heights for the several container types, see Appendix 2.

For towing strains and weight of liferafts, see Appendix 3.

The liferaft shall be packed with a SOLAS A PACK or SOLAS B PACK.

Gas cylinders shall be of an approved type.

Components in the gas inflation system shall be approved according to ISO 15738:2019.

The liferaft is intended to be installed with external weak link and a hydrostatic release unit. Float free arrangement to be checked upon installation on board.

The design assessment is based on International Life-Saving Appliances (LSA) Code, IMO Res. MSC.48(66) as amended by IMO Res. MSC.218(82) and IMO Res. MSC.293(87).

Production testing shall be carried out according to IMO Res. MSC.81(70) part 2.

With ref. to 'Tests carried out' the liferafts including type designation S30 are approved for extended service intervals up to 30 months in accordance with SOLAS Ch. III, Regulation 20.8.3 on the condition that:

1. Such extended service intervals have been approved by the ships flag administration.
2. The liferafts are checked onboard in accordance with SOLAS Ch. III Regulation 20.8.3.2 at intervals in accordance with SOLAS Ch. III Regulation 20.8.1.1, according to procedures issued by the manufacturer
3. The liferafts shall be serviced at approved servicing stations in accordance with the recommendations in IMO Res. A.761(18) at intervals not exceeding 30 months.

Type approval documentation

Certification in accordance with Class Programme DNV-CP-0338, September 2021.

For drawings and parts lists, see Appendix 4.

Tests carried out

Prototype tests and test reports in accordance with the Recommendation on Testing of Life-Saving Appliances, IMO Res. MSC.81(70) part 1, including IMO Res. MSC.226(82), MSC.295(87) and MSC.323(89), have been witnessed and evaluated and found to be in compliance.

Tests and reports in accordance with test requirements listed in MSC.1/Circ.1328 item 5.4.2 -5.4.10 have been witnessed by DNV surveyor and evaluated and found to be in compliance (test report item 5.4.4 dd. 2009-09-01, item 5.4.6 dated 2009-10-29, item 5.4.7 dated 2009-10-28, item 5.4.8- 5.4.10 dated 2009-11-02/2009-11-04).

Tested according to the MarED recommendation for liferaft occupancy weight increase from 75 kg to 82.5 kg: test report nos. 1027-1029, 1228, 1395, 1451, 1497, 1509, 1534, 1544, 1554, 1581-1587, 1589, 1591-1593, 1595-1603, 1605-1617, 1620, 1622, 1627-1642, 1655-1657 and 1683-1685.

Prototype tests and test reports in accordance with IMO Res. MSC.81(70) part 1 for 39DKS witnessed by DNV surveyor: 1484, 1485, 1620, 2043, 2080, 1814, 1406, 1583, 1631, 254a-c-d-e-f, 1584, 257b-c-d, 1585, 2078, 218, 219, 1948, 1413, 2079, 256a, 2120.

Prototype tests and test reports in accordance with IMO Res. MSC.81(70) part 1 for 10DKS witnessed by DNVGL surveyor: 3596, 3428, 3538, 3539, 3597, 3598, 3802, 3803, 3363, 3542, 3543, 3509, 2911, 2926, 3011, 3012, 3085, 3086, 3626, 3559, 3579, 3554, 3555, 3595, 3351, 3610, 3534, 3556, 3557, 3447, 3805, 3471, 3472, 3810, 3011, 3452, 3804, 3345, 3558, 3318, 3487, 3348, 1905a, 1905b, 1418, 1905c, (ref. CAR 10 DKS Rev.1 dated 22 June 2021)

Prototype tests and test reports in accordance with IMO Res. MSC.81(70) part 1 for 12DKS witnessed by DNVGL surveyor: 3596, 3428, 3538, 3539, 3597, 3598, 3363, 3542, 3543, 3509, 2911, 2926, 3011, 3012, 3085, 3086, 3626, 3559, 3579, 3554, 3555, 3595, 3351, 3610, 3534, 3556, 3557, 3447, 3471, 3472, 3452, 3345, 3558, 3318, 3487, 3348, 1905a, 1905b, 1418, 1905c, Material and component overview dated 2020-11-19 (Appendix 1), Seam strength tests overview iaw IMO Res. MSC.81(70), item 5.17.9.1 dated 2020-11-19 (Appendix 2) (ref. CAR 12 DKS Rev.1 dated 15 January.2021).

Prototype tests and test reports in accordance with IMO Res. MSC.81(70) part 1 for 16DKS witnessed by DNVGL surveyor: 100, 1410, 1418, 1809a, 1870, 1899, 1905a, 1905b, 1905c, 1993, 2025, 2689, 2690, 2691, 2752, 2873, 2876, 2878, 2880, 2881, 2884, 2885, 2911, 2926, 3011, 3012, 3085, 3086, 3126, 3129, 3130, 3135, 3156, 3182, 3186, 3187, 3190, 3211, 3212, 3223, 3224, 3225, 3226, 3227, 3223, 3255, 3318, 3319, 3320, 3322, 3323, 3324, 3325, 3428, 3429, 3430, 3432, 3488 (ref. CAR 16 DKS Rev.1 dated 23 October 2020)

Prototype tests and test reports in accordance with IMO Res. MSC.81(70) part 1 for 20DKS witnessed by DNVGL surveyor: 3594, 3428, 3546, 3547, 3601, 3602, 3364, 3550, 3551, 3510, 2911, 2926, 3011, 3012, 3085, 3086, 3617, 3591, 3592, 3588, 3589, 3593, 3352, 3611, 3536, 3590, 3338, 3448, 3473, 3474, 3453, 3451, 3339, 3318, 3489, 3349, 1905a, 1905b, 1418, 1905c, Material and component overview dated 2020-11-19 (Appendix 1), Seam strength tests overview iaw IMO Res. MSC.81(70), item 5.17.9.1 dated 2020-11-19 (Appendix 2). (Ref. CAR 20 DKS Rev.1 dated 19 November 2020)

Prototype tests and test reports in accordance with IMO Res. MSC.81(70) part 1 for 150DKS VEDS witnessed by DNVGL surveyor: 3298, 3299, 3303, 3300, 3301, 3302, 3305, 3807, 3290, 3312, 3806, 3808, 3415, 3304, 3840, 3416, 3286, 3287, 3297, 3295, 3296, 3292, 3291, 2870, 2871, 2877, 2882, 2883, 2889, 2752, 3288, 3289, 3324, 3479, 3480 and 3425. (Ref. CAR VEDS MES rev.3 dated 16 June 2021).

Prototype tests and test reports in accordance with IMO Res. MSC.81(70) part 1 for 6DKS witnessed by DNV surveyor: 3596, 3428, 3947, 3948, 3989, 3990, 3880, 3881, 3781, 3951, 3952, 3772, 2911, 2926, 3011, 3012, 2935, 3936, 3939, 3940, 3941, 3942, 3937, 3888, 3771, 3924, 3850, 3938, 3746, 3828, 3874, 3818, 3819, 3985, 3986, 3829, 3869, 3640, 3752, 3318, 3487, 3489, 3763, 1905a, 1905b, 1418, 1905c, Material and component overview dated 2021-12-09 (Appendix 1), Seam strength tests overview iaw IMO Res. MSC.81(70), item 5.17.9.1 dated 2020-12-08 (Appendix 2) (Ref. CAR dated 2021-12-08).

Prototype tests and test reports in accordance with IMO Res. MSC.81(70) part 1 for 8DKS witnessed by DNV surveyor: 3596, 3428, 3949, 3450, 3991, 3992, 3821, 3953, 3954, 3875, 2911, 2926, 3011, 3012, 2935, 3933, 3943, 3944, 3946, 3934, 3889, 3997, 3911, 3861, 3935, 3884, 3858, 3974, 3975, 3871, 3847, 3885, 3318, 3489, 3886, 1905a, 1905b, 1418, 1905c, Material and component overview dated 2021-12-09 (Appendix 1), Seam strength tests overview iaw IMO Res. MSC.81(70), item 5.17.9.1 dated 2020-12-08 (Appendix 2) (Ref. CAR dated 2022-02-03 Rev.1).

Prototype tests and test reports in accordance with IMO Res. MSC.81(70) part 1 for 35DKS witnessed by DNV surveyor: 3594, 3428, 3904, 3905, 3993, 3994, 3782, 3908, 3909, 3961, 3962, 3774, 2911, 2926, 3011, 3012, 2671, 3895, 3893, 3894, 3892, 3896, 3890, 3770, 3912, 3849, 3897, 3751, 3876, 3973, 3976, 3971, 3641, 3757, 3318, 3489, 2120, 3768, 1905a, 1905b, 1418, 1905c, Material and component overview dated 2021-12-09 (Appendix 1), Seam strength tests overview iaw IMO Res. MSC.81(70), item 5.17.9.1 dated 2020-12-08 (Appendix 2) (Ref. CAR dated 2022-02-03 Rev.1).

Prototype tests and test reports in accordance with IMO Res. MSC.81(70) part 1 for 39DKSN, 39DKSN S30 and 39DKSN E witnessed by DNV surveyor: 4040, 3428, 4051, 4052, 2362, 4053, 4054, 2080, 2120, 2911, 2926, 3011, 3012, 2733, 2734, 1583, 4049, 4050, 1584, 254E, 345A, 254D, 254C, 254G, 4039, 1585, 4047, 4043, 4045, 4046, 4044, 3016, 4048, 256A, 3489, 1565, 1905a, 1905b, 1418, 1905c, Material and component overview dated 2021-12-09

(Appendix 1), Seam strength tests overview iaw IMO Res. MSC.81(70), item 5.17.9.1 dated 2020-12-08 (Appendix 3) (Ref. CAR dated 2022-03-30).

For test reports supporting the design changes, see Appendix 5.

Marking of product

The product is to be indelibly marked with name of manufacturer, type designation and date of manufacture. The marking shall comply with the LSA Code (IMO Res. MSC.48(66)) items 4.2.6.3 and 4.2.7.

All instructions and markings accompanying the liferafts, or printed directly on the liferafts, shall be in both English and French, as per "Procedures For Approval of Life-Saving Appliances and Fire Safety Systems, Equipment and Products" (TP14612E) Ch.2.2.1.3.

Transport Canada Approval

Based on the procedures laid down in the Transport Canada Publication entitled "Approval Procedures for Life Saving Equipment and Structural Fire Protection Products (TP 14612E)", DNV confirms that the product listed in this certificate is in accordance with Transport Canada's requirements.

Periodical assessment

DNV's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Programme DNV-CP-0338, Section 4.

APPENDIX 1

S30: added to type designation e.g. 12 DKS S30. Liferaft environmentally packed to allow for extended service intervals up to 30 months. The life raft is subject to an annual onboard inspection.

N: added to type designation e.g. 12 DKS N. The liferaft is equipped with an improved "stairway" like boarding arrangement.

VENOC: added to type designation e.g. 50 DKS VENOC. The liferaft equipped with reduced SOLAS A emergency pack: 1 liter of drinking water per person is replaced by manually powered reverse osmosis desalinator according to LSA Code §4.1.5.1.19.

E: added to type designation e.g. 6 DK+ E. Environmental packed liferaft prepared for extended service intervals

U: added to type designation e.g. 100 DKS U. Liferaft used in combination with 'Undertun' MES system.

SBS: added to type designation e.g. 100 DKS SBS. Liferaft used in combination with 'SBS' MES system (Simple Bowsing System).

BWD: added to type designation e.g. 12 DKS BWD - Bundeswehr Deutschland.

VEDS: added to type designation e.g. 150 DKS VEDS. The 150 DKS VEDS can only be used as an integrated liferaft of the VEDS MES-system.

VEMC: added to type designation e.g. 100 DKS VEMC. The 100 DKS VEMC can only be used as an integrated liferaft of the VEMC MES-system.

VEMS: added to type designation e.g. 100 DKS VEMS. The 100 DKS VEMS can only be used as an integrated liferaft of the VEMS MES-system.

VELS: added to type designation e.g. 100 DKS VELS. The 100 DKS VEMS can only be used as an integrated liferaft of the VELS MES-system

VES: added to type designation e.g. 100 DKS VES. The 100 DKS VES can only be used as an integrated liferaft of the VES MES-system

VEC: added to type designation e.g. 100 DKS VEC. The 100 DKS VEC can only be used as an integrated liferaft of the VEC-system

VEC+: added to type designation e.g. 100 DKS VEC+. The 100 DKS VEC+ can only be used as an integrated liferaft of the VEC+-system

ADD: added to type designation e.g. 100 DKS ADD, ref. Additional liferaft. The Additional liferaft is similar to a throw over board liferaft with steering lines to connect the liferaft to a system raft.

(35) RS: added to type designation e.g. 50 DKS (35) RS. The 50 DKS is downgraded to 35 pers. with an average weight of 100 kg. The liferaft is used for offshore system.

APPENDIX 2

Max. capacity and max. installation heights for the several container types. Container type designation is given as 16-xxxx, and emergency packs SOLAS A or B is given as "A" and "B". "A*" is SOLAS A emergency pack with desalter.

Listed liferaft types covers types S30, N, VENOC, E, SBS, BWD, VEDS, VEMC, VEMS, VELs, VES, (35) RS and ADD variants. Each size listed covers variations with the same capacity.

Liferaft type	Product description	Container type with max. installation height 18 m	Container type with max. installation height 22 m	Container type with max. installation height 25 m	Container type with max. installation height 30 m	Container type with max. installation height 36 m	Container type with max. installation height 60 m	Max. capacity [persons]
6 DKS	S12 S30 E	A 9041					A 50xx	6
8 DKS	S12 S30 E						A 50xx	8
10 DKS	S12 S30 E	A 9046					A 61xx	10
12 DKS	BWD S12 BWD S30	A 9044 A 0119		A 0120 A 51xx				12
12 DKS	S12 S30 E	A 9046					A 61xx	12
12 DKS N	S12 S30	A 9044 A 0119		A 0120				12
16 DKS	S12 S30 E	A 9044					A 51xx	16
16 DKS N	S12 S30					A 52xx		
20 DKS	S12 S30 E	A 9044					A 60xx	20
25 DKS	S12 S30 E			A 82xx		B 0162	A 86xx	25
25 DKS N	S12 S30	A 0162 B 0162 B 89xx		A 82xx		A 86xx		25
35 DKS	S12 S30 E					B 54 xx	A 57xx	35
39 DKS	S12 S30 E			A* 86xx A* 77xx		A 57xx B 54xx A 59xx		39
39 DKS N	S12 S30 E			A 57xx				39
50 DKS	S12 S30 E	A* 57xx			A 0142 B 75xx B 57xx	A 76xx A 0142		51
	VES (35) RS							35
	SBS (14M)	B 57xx						51
100 DKS	S12 S30 E VEMC VEMS VES VEC				A*88xx B 88xx	A 91xx B 0131		101
					A*88xx B 88xx			101
	SBS (14M)	A*88xx B 88xx						101
	S12 VEC+ S30 VEC+		A 050x B 053x					101
	VENOC ADD					A*97xx		101

150 DKS	S12 S30 E VELS VEMC					A* 91xx B 91xx		153
			A* 98xx B 91xx					153
	SBS (14M)	B 91xx						153
	VEDC	A 92xx A*0202 B 0202 A* 95xx						153
	VEDS	A*Casette 1,2,3 B cassette 1,2,3						153

APPENDIX 3

Towing strain and weight of liferafts:

Liferaft type	Towing strain 2 knots	Towing strain 3 knots	Weight of liferaft ± 2% [kg]
6 DKS	0.47 kN	0.9 kN	80 (SOLAS A-pack)
8 DKS	0.46 kN	0.86 kN	91 (SOLAS A-pack)
10 DKS	0.58 kN	1.17 kN	114 (SOLAS A-pack)
12 DKS BWD	0.8 kN	1.3 kN	111 (SOLAS A-pack)
12 DKS	0.58 kN	1.17 kN	119 (SOLAS A-pack)
12 DKS N	0.8 kN	1.3 kN	124 (SOLAS A-pack)
16 DKS	0.68 kN	1.27 kN	142 (SOLAS A-pack)
16 DKS N	0.7 kN	1.4 kN	130 (SOLAS A-pack)
20 DKS	0.68 kN	1.37 kN	164 (SOLAS A-pack)
25 DKS	0.7 kN	1.4 kN	216 (SOLAS A-pack) 167 (SOLAS B-pack)
25 DKS N	0.7 kN	1.4 kN	215 (SOLAS A-pack) 230 (SOLAS B-pack)
35 DKS	1.05 kN	1.88 kN	299 (SOLAS A-pack) 192 (SOLAS B-pack)
39 DKS	1.57 kN	2.65 kN	258 (SOLAS A-pack)
39 DKS N	1.57 kN	2.65 kN	314 (SOLAS A-pack)
50 DKS	1.37 kN	2.15 kN	400 (SOLAS A-pack) 280 (SOLAS B-pack)
100 DKS	1.1 kN	2.3 kN	840 (SOLAS A-pack) 550 (SOLAS B-pack)
100 DKS ADD	1.69 kN	2.83 kN	800 (SOLAS A-pack) 510 (SOLAS B-pack)
150 DKS	1.7 kN	3.1 kN	955 (SOLAS A-pack w/desalter) 840 (SOLAS B-pack)

APPENDIX 4

Drawings and parts lists for the liferafts integrated/associated with the several MES variants:

Liferaft type	Parts list no.	Drawing no.
6 DKS, 6 DKS S30, 6 DKS E	ENG-20093892 Rev.1 (sheet 4/4)	ENG-20093892 Rev.1 (sheet 1/4, 2/4, 3/4) ENG-20093976 Rev.0 ENG-20115202 Rev.0 ENG-20086300 Rev.1
8 DKS, 8 DKS S30, 8 DKS E	ENG-20101421 Rev.1 (sheet 4/4)	ENG-20101421 Rev.1 (sheet 1/4, 2/4, 3/4) ENG-20115191 Rev.0 ENG-20115202 Rev.0 ENG-20086300 Rev.1
10 DKS, 10 DKS S30, 10 DKS E	ENG-20097161 Rev.0 (sheet 4/4)	ENG-20097161 Rev.0 (sheet 1/4, 2/4, 3/4) ENG-20070293 Rev.0 ENG-20070168 Rev.0
12 DKS, 12 DKS S30	43000435.000	43000435.001/002/003
12 DKS, 12 DKS S30	43001825.000	43001825.001/002/003
12 DKS, 12 DKS S30	43001870.000	43001870.001/002/003
12 DKS, 12 DKS S30	43002376.000	43002376.001/002/003
12 DKS BWD, 12 DKS BWD S30	43002448.000	43002448.001/002/003
12 DKS, 12 DKS S30, 12 DKS E	ENG-20070017 Rev.0 (sheet 4/4)	ENG-20070017 Rev.0 (sheet 1/4, 2/4, 3/4) ENG-20070293 Rev.0 ENG-20070168 Rev.0
16 DKS, 16 DKS S30, 16 DKS E	43002575.000	43002575.001/002/003
16 DKS, 16 DKS S30	43002546.000	43002546.001/002/003
20 DKS, 20 DKS E, 20 DKS S30	ENG-20068628 Rev.0 (sheet 4/4)	ENG-20068628 Rev.0 (sheet 1/4, 2/4, 3/4) ENG-20070294 Rev.0 ENG-20070168 Rev.0 42000866.000.03
25 DKS, 25 DKS S30	43000334.000	43000334.001/002/003
25 DKS, 25 DKS S30	43000445.000	43000445.001/002/003
25 DKS Direct Boarding (DB)	43000542.000	43000542.001/002/003
25 DKS, DD-MES	43000547.000	43000547.001/002/003
25 DKS, 25 DKS S30	43001826.000	43001826.001/002/003
35 DKS, 35 DKS S30, 35 DKS E	ENG-20094892 Rev.0 (sheet 4/4)	ENG-20094892 Rev.0 (sheet 1/4, 2/4, 3/4) ENG-20115228 Rev.0 ENG-20115262 Rev.1 ENG-20079100 Rev.0 ENG-20093621 Rev.0
39 DKS, 39 DKS S30, 39 DKS E	43002375.000	43002375.001/002/003
39 DKS, 39 DKS S30, 39 DKS E	ENG-20121564 Rev.0 (sheet 4/5 and 5/5)	ENG-20121564 Rev.0 (sheet 1/5, 2/5 and 3/5) 42003670 42003671 ENG-20088562
50 DKS LS2	43000621.000	43000621.001/002/003
50 DKS, 50 DKS S30, 50 DKS E	43002438.000	43002438.001/002/003
50 DKS (35) RS	43002444.000	43002444.001/002/003
50 DKS NOR NAVY	43002447.000	43002447.001/002/003
50 DKS RS	43002464.000	43002464.001/002/003
50 DKS SBS	43002504.000	43002504.001/002/003
100 DKS Basic canopy no.1	42002623.000	42002623.000
100 DKS basic raft no.1	42002641.000	42002641.001/002/003
100 DKS basic raft no.2	42002693.000	42002693.001/002/003
100 DKS Basic canopy no.6	42002764.000	42002764.001/002/003
100 DKS Basic canopy no.2	42004381.000	42004381.001
100 DKS basic raft no.5	43001954.000	43001954.001/002/003
100 DKSU	43002470.000	43002470.001/002
100 DKS SBS	43002540.000	43002540.001/002/003
100 DKS VEMC, 100 DKS VEMC S30	ENG-20061466 (sheet 4)	ENG-20061466 (sheet 1-3)
100 DKS VEMS	ENG-20085761 (sheet 4)	ENG-20085761 (sheet 1-3)
100 DKS VES	ENG-20087276 (sheet 4)	ENG-20087276 (sheet 1-3)

100 DKS VEC/VEC+S30	ENG-20122098 (sheet 4)	ENG-20122098 (sheet 1-3)
100 DKS ADD	ENG-20149969 (sheet 4)	ENG-20149969 (sheet 1-3)
150 DKS Direct Boarding (DB) LS3	ENG-20086463 (sheet 10+11)	ENG-20086463 (sheet 1-9)
150 DKS VEMC	ENG-20108350 sheet 10+11)	ENG-20108350 (sheet 1-9)
150 DKSU	ENG-20112485 (sheet 10)	ENG-20112485 (sheet 1-9)
150 DKS SBS	ENG-20100071 (sheet 10-11)	ENG-20100071 (sheet 1-9)
150 DKS canopy	ENG-20100071 (sheet 10-11)	ENG-20100071 (sheet 1,2,3 and 5)
150 DKS VEDS no.1	ENG-20088679	ENG-20088679 ENG-01493095
150 DKS VEDS no.2 and 3	ENG-20089158	ENG-20089158 ENG-20000210 ENG-20018468
150 DKS VEDC	ENG-20108330 (sheet 10+11) ENG-20108840 (sheet 10+11)	ENG-20108330 (sheet 1-9) ENG-20108840 (sheet 1-9)
150 DKS VELs	ENG-20114211 (sheet 10-13)	ENG-20114211 (sheet 1-9)

APPENDIX 5

Design changes with supporting documentation:

Design Change No.	Date	Subject	Test reports (witnessed by DNV)
10274	2010-03-22	Change from DKS to DKS	-
10299	2012-02-14	Liferaft type 50 DKS equipped for 35 persons.	Test report No.: - 1740
10314	2013-03-21	New Inflation System, M-07-UM- GISSERVO	Test report Nos.: - 1858, 1859, 1895, 1897
10315	2013-03-21	Change to Daniamant RL6 combi light	Test report Nos.: - 1881 ~1889
10316	2013-04-08	Plastic strapping around container, replacing bursting bands	Test report Nos.: - 1887, 1888, 1901, 1902, 1903, 1904
10319	2013-05-13	Installation height 35 m for 100 DKS VENOC	Test report Nos.: - 1731
10326	2014-03-24	New canopy material (Rivertex 4000 PES PU coated)	Test report Nos.: - 1899, 1912, 1803, 1993, 1870, 2015 Material Technical Report 1809 A dated 2012-10-25 from SATRA Technology Centre, UK
10330	2013-10-31	Installation height 35 m for 100 DKS	Test report Nos.: - 2023-2024
10339	2014-04-01	Plastic strapping – appendix to DC 10316	Test report Nos.: - 1887, 1888, 1901~1904
10345	2014-12-01	Replacing painter line for liferafts > 25 persons	Test report No.: - 2168
10348	2015-02-27	50 DKS downgraded (35 person@100 kg)	Test report No.: - 1740
10349	2015-04-22	50 DKS, change in location of the stabilizing pockets	Test report Nos.: - 2185, 2186
10359	2015-09-08	DKSU – 100 DKS modified to fit Undertun MES	Test report No.: - 2235
10362	2015-10-15	DKSU – 150 DKS modified to fit Undertun MES	Test report No.: - 2260
10371	2015-11-30	9800 container for 150 DKS A pack with desalter	Test report Nos.: - 2274, 2275
10378	2016-01-22	Fabric RBND6, new boarding ramp, introducing stabilizing pockets, handles for boarding, change floor to single layer, inner and outer lifelines	Test report Nos.: - 1532, 1573, 2252~2254
10389	2017-06-22	Containers for 100 DKS B-pack. Drawing Nos.: 16008569, 16008128, 16008133, 16008131, 16008570, 16008571	Test report Nos.: - 2507, 2508, 2509, 2514, 2515, 2516, 2522, 2607, 2608, 2609, 2610, 2611, 2612, 2725~2730
10392	2017-02-03	150 DKS: liferaft inflates outward, away from chute (when used as integrated liferaft for VEMC -MES system)	Test report Nos.: - 2532 (150 DKS reverse B-pack)
10396	2017-03-15	39 DKFS packed in container 016-8601	Test report Nos.: - 2460, 2468
10402	2017-01-20	Containers for 100 DKS A-pack Drawing Nos.: 16008569, 16008128, 16008133, 16008131, 16008570, 16008571	Test report Nos.: - 2427, 2429, 2430, 2431, 2432, 2434, 2438, 2475, 2476, 2477, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2500, 2528, 2725~2730
10419	2018-05-04	Packing procedure for liferaft 100 and 150 DKS and DKR used in SBS.	Test report Nos.: - 2739, 2740, 2743, 2583, 2624, 2625, 2628, 2738, 2741, 2744, 2731, 2735, 2736, 2742
10420	2018-05-18	Fabric NK300C from ContiTech	Test report Nos.: - 2595, 2596, 2667, 2733, 2734, 2673, 2674, 2688, 2682, 2683, 2767, 2768, 2675, 2676, 2677, 2678, 2668, 2669, 2686, 2687, 2692, 2685, 2693, 2684, 2752, 2689, 2690, 2691

			Additional buoyancy material (NK300C) supported by the following test reports: Prototype test in accordance with IMO Res. MSC.81(70), Part 1: - weft distortion dated 2017-12-18, - Test report no. 2747: Coating Adhesion dated 2018-04-13 - Test report no. 2749: Oil resistance dated 2018-04-13 - Test report no. 2750: Blocking resistance 2018-04-13 - Laboratory test report no 1530100000 rev. 13 dated 2018-03-05 for NK300C by Contitech Laboratory Norheim, Germany witnessed by DNVGL surveyor - DNV GL verification statement N141GV0D dated 2018-03-15
10421	2018-04-23	100 DKS SBS liferaft with slide entrance (identical to 150 DKS) Drawing no. 43002540.000 (3 sheets) dated 2018-02-06	Test report Nos.: - 781, 2753, 2754, 2755, 2756
10422	2018-05-25	Signal Lamp - in box with spare bulb and battery	Test report Nos.: - 2456, 2458, 2464, 2466
10424	2018-07-06	16 DKS with average load of 110 kg per person	Test report Nos.: - 2764, 2775, 2776, 2766, 2774, 2255, 2077, 1685, 2785, 2765, 659, 1596, 1640, Canopy closure test (no rep no - dated 1997-11-20), 682, Weaklink test - Hammer certificate includes weaklink test, Damage test (no rep no - dated 1998-02-05), 2253, 2762, 2759, 2760, 2761, 1947, 2253, 225, 2116+2120, 1043, 2596, 2667, Buoyancy of float free liferafts (no rep no - dated 1998-02-04)
10434	2018-10-08	Alternative hardener 'Desmodur RFE'	Test report Nos.: - 2834 (3x over pressure test) - 2828, 2829, 2830, 2831, 2833 (seam strength tests)
10437	2018-12-10	Alternative hardener 'Beyond'	Test report Nos.: - 2905, 2914, 2915 (3 x overpressure test) - 2880, 2881, 2882, 2883, 2884, 2885 (seam strength test)
10443	2019-04-23	Improved painter system for liferafts with capacity of 26 and more	Test report Nos.: - 3088, 3087, 2952, 2953
10438	2019-04-23	Alternative hardener 'TM-93'	Test report Nos.: - 2868, 2869, 2870, 2871, 2872, 2873, 2876, 2877, 2878, 2988, 2989, 2990, 3017, 3019
10450	2019-04-12	Add container 9500 and 0202 to 18m for 150 DKS liferafts	Test report No.: - 1535, 1536, 1538, 1539 Drawing No.: - 16001051 Rev.03 dated 2017-01-20 (150 DKS Container VEDC 2.2/2.3 - (Raft 2 016-0202)) - 16001552 Rev.02 dated 2017-01-20 (150 DKS A desalter container VEDC 2.3 Raft 1 (016-9500))
10451	2019-04-23	Painter system with alternative hardener 'TM-93' and 'Beyond'	Test report No.: - 3085, 3086
10472a	2020-07-29	Additional variant of S30 add. liferaft 100- and 150 DKS.	Test report Nos.: - 3405 - A0504

			Drawing Nos.: - ENG-20034227 - ENG-20034752 - ENG-20035264
10472b	2022-10-12	Position of snap hook for S30 additional liferaft (25 DKS/DKR S30, 50 DKS/DKR, 100 DKS/DKR S30, 150 DKS/DKR S30)	Test report No.: - 4198 - 4199 - 4201 Drawing No.: - ENG-20035264
10157	2003-10-24	25 DKS A-pack in 82xx container.	Test report Nos.: - 454 Drawing No.: - 42000683
10467	2020-07-03	39 DKS A-pack in 59xx container	Test report Nos.: - 3386, 3387, 3370, 3373, 3396, 3397 Drawing Nos.: - 42004500
10468	2020-07-03	50 DKS A-pack with desalter in 57xx container	Test report Nos.: - 3367, 3368, 3371, 3374, 3398, 3399 Drawing Nos.: - 42000795
10469	2020-07-02	150 DKS A-pack with desalter in 98xx container.	Test report Nos.: - 3388, 3389 Drawing Nos.: - 16007767
10470	2020-07-03	12 DKS A-pack in 51xx container	Test report Nos.: - 2379, 2380 Drawing Nos.: - 42000161
10471	2020-07-02	50 DKS A-pack in 0142 container	Test report Nos.: - 1986, 1987 Drawing Nos.: - 42000127
10475	2020-08-06	Drop height of 91xx container	Test report Nos.: - 1026, 3355, 3356, 3405 Drawing Nos.: - ENG-20048442 - ENG-20035264
10477	2020-09-22	50 DKS liferaft - alternative canopy with center entrance	Test report Nos.: - 3310, 3311, 3458, 3459, 3460, 3491, 3524 Drawing Nos.: - 43002504.000/001/002/003
10480	2020-09-22	100 DKS VEMC inflation	Test report Nos.: - 3445, 3446, 3455, 3456, 3466, 3467, 3468, 3469, 3470, 3490, 3507, 3508, 3513, 3525. Drawing Nos.: - 42005812.000/001/002
10488	2021-01-18	100 DKS VEMC S30, A-pack	Test reports Nos.: - 3627 and 3628

10490	2021-02-08	Type 12 DKS changes to 12 DKS BWD Type 12 DKS S30 changes to 12 DKS BWD S30 (Type 12 DKS, 12 DKS S30, 12 DKS E is now reflecting a new design)	12 DKS 'old design' = 12 DKS BWD 12 DKS 'new design' = 12 DKS
10493	2021-06-22	12 DKS approved in low profile container	Test reports Nos.: - 3805, 3810, 3811, 3804, 3802, 3803 Drawing No. ENG-20096279
10494	2021-06-18	16 DKS approved in low profile container	Test reports Nos.: - 3744, 3812, 3813, 3758, 3792, 3793 Drawing No. ENG-20093408
10495	2021-06-18	20 DKS approved in low profile container	Test reports Nos.: - 3745, 3814, 3815, 3759, 3794, 3795 Drawing No. ENG-20093408
10501	2021-09-02	39 DKS approved in 77xx container	Test report Nos.: - 3852, 3853 - Hot and cold inflation tests dated Feb. 1998 Drawing No. ENG-20098130
10500	2021-11-15	100 DKS VEMC S30, B-pack (see also DC 10488)	Test report Nos.: - 3855, 3856, 2573, 2739, 2743, 2780 Drawing No.: - ENG-20061466
10505	2021-11-15	Increase stowage height for 97xx container	Test report Nos.: - 3898, 3899 Drawing No.: - 14001691/ 16003045
10506	2021-11-15	Change in main entrance for 100 DKS VENOC	Test report Nos.: - 2753, 2754, 781, 3490 Drawing Nos.: - ENG-20111190 - ENG-20086107
10507	2021-11-15	Remove metal band on 91xx container for ADD. liferafts	Test report Nos.: - 3865 - 3866 Drawing No.: - ENG-20035264
10512	2022-11-11	Black rubber fabric RBND6 BCR	- Test report Nos.: 4035, 4036, 4058, 4059, 4060, 4061, 4062, 4063, 4065, 4066, 4075, 4076, 4079, 4080, 4081, 4082, 4085, 4086, 4087, 4096, 4097, 4098, 4101, 4102, 4103, 4104 - Test report TX772622/2022/PL dated 29 September 2022 from SGS, Taoyuan City, Taiwan
10513	2022-03-04	Container 0131 (includes hand laid type 0207) for 100 DKS B-pack	Test report Nos.: - 4030 - 4031 Drawing No.: - ENG-20093376 - ENG-20112176
10514	2022-12-14	100 DKS ADD - single floor + aluminium insulation floor	Test report Nos.: - 4032, 4083, 4252, 4253 Drawing No.: - ENG-20149969

10515	2022-11-04	Alternative stab. Pockets 120L for 100 – 150 person liferafts	Test report Nos.: - 4032, 4064 Drawing No.: - ENG-2014760
10516	2022-11-04	Extended inner tube, long	Test report Nos.: - 4059, 4087, 4066, 4101, 4081
10523	2022-10-12	Closing of container for 150 DKS ADD	Test report Nos.: - 4198 - 4199 - 4200 Drawing No: - ENG-20035264