

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB0000097
Revision No:
17

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV AS under the authority of the Government of Norway.

This is to certify:

That the Marine evacuation systems

with type designation(s)

Viking Evacuation Dual Chute, VEDC 2.1, 2.2, 2.3, 2.4, 2.4.1, 2.5, 2.7 and 2.8

Issued to

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

is found to comply with the requirements in the following Regulations/Standards:

Regulation (EU) 2022/1157,

item No. MED/1.27. SOLAS 74 as amended, Reg. III/4, III/15, III/26, III/34 & X/3, LSA Code and 2000 HSC Code 8.

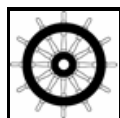
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2025-11-10**.

Issued at **Høvik** on **2022-10-17**

DNV local station:
Denmark CMC

Approval Engineer:
Tessa Bieber



Notified Body
No.: **0575**

for **DNV AS**

Sverre Olav Bergli
Head of Notified Body

A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F), as allowed by the "Agreement between the United States of America and the EEA EFTA states on the mutual recognition of Certificates of Conformity for Marine Equipment" signed 17 October 2005, and amended by Decision No 1/2019 dated February 22nd, 2019.



The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.

Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

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

“**Viking Evacuation Dual Chute, VEDC 2.1, 2.2, 2.3, 2.4, 2.4.1, 2.5, 2.7 and 2.8**”,

The Viking Evacuation Dual Chute (VEDC) is a Marine Evacuation System with dual vertical chute where evacuation takes place directly into one of the two VIKING 150 DKS liferafts. Both rafts are escorted from the stowage position to the water with a sledge and are inflated beside each other along the shipside. The certificate covers the following variants:

VEDC Variants	2 pcs. VIKING 150 DKS		Max. Evacuation capacity [Persons/30 min]	Installation height [m]
	A-pack	B-pack		
2.1	•		736	8.9 - 16.8
2.2		•	908	8.9 - 16.8
2.3	•	•	908	8.9 - 16.8
2.4	•		908	8.9 - 16.8
2.4.1	•		908	5.8 – 19.7
2.5	•		734	8.9 - 16.8
2.7	•		908	8.9 - 16.8
2.8	•		908	8.9 - 16.8

The MES systems may be fitted with the following features:

- A traffic light system for regulation of the evacuation sequence (ref. Design Change 10435 with supporting test reports as listed under Type examination documentation).
- A freeboard device for cutting the lowest 3 funnels of the inner chute in case of low evacuation heights (ref. Design Change 10440 with supporting test reports + FMEA analysis as listed under Type examination documentation).

For further details and material specification see document “VEDC Type Variants” listed under the examination documentation.

The VEDC has been tested according to IMO Res. MSC 81(70) item 12.6.1 and 12.6.2 with VIKING 150 DKS associated drop-down liferafts. DNV GL accepts the other associated drop-down liferafts for VEDC provided that the line attachment arrangement is the same as arranged for Viking Evacuation Chute (VEC). The other approved associated drop-down liferafts are: VIKING 150 DKS S30, 100 DKS, 50 DKS and 25 DKS.

Application/Limitation

The VEDC 2.1/2.2/2.3/2.4/2.5/2.7/2.8 is approved for the installation height 8.9 m – 16.8 m.

The VEDC 2.4.1 is approved for the installation height 5.8 m – 19.7 m.

The VEDC is certified for the following capacities:

Evacuation time VEDC.2.1 <i>(181 seconds includes launching, inflation preparation of system and cut free of liferaft)</i>	<u>specified evacuation time - 181 seconds</u> 4,4 seconds/person (1800-181) /4,4 = 368 persons Double chute: 2 x 368= 736 persons
Evacuation time VEDC. 2.2 / 2.3 / 2.4 /2.4.1 / 2.7 /2.8 <i>(208 seconds includes launching, inflation preparation of system and cut free of liferaft)</i>	<u>specified evacuation time - 208 seconds</u> 3,5 seconds/person (1800-208) /3,5 = 454 persons Double chute: 2 x 454 = 908 persons
Evacuation time VEDC.2.5 <i>(185 seconds includes launching, inflation preparation of system and cut free of liferaft)</i>	<u>specified evacuation time - 185 seconds</u> 4,4 seconds/person (1800-185) /4,4 = 367 persons Double chute: 2 x 367 = 734 persons

Integrated and associated liferafts shall have separate MED Approval and bear the MED Mark of Conformity.

The MES is accepted with two VIKING 150 DKS as main drop-down rafts. The capacity can be increased by additional drop-down liferafts (see above).

Gas cylinders and components in the pressure gas systems shall be of an approved type.

Components in the gas inflation system should be approved according to ISO 15738:2002.

The following is to be submitted to the Flag Administration in each case, either by the yard, owner or equipment manufacturer:

- Plan showing the MES system fully deployed on the specific vessel in side-view and cross-sectional view under required unfavourable conditions of trim and list as the type approval does not cover the requirements to installation covered by LSA Code Ch. 6.2.2.1.4 and SOLAS Ch. III. Details shall be shown.
- Plan showing the arrangement of the MES on board any vessel, including the passageway and embarkation areas, to ensure that the flow rate as stated above can be maintained throughout the total evacuation of the number of persons for which the MES is certified for.

It shall be verified that the ship on which the MES is installed is equipped with a sufficient number of rescue boats or lifeboats to satisfactory marshal and support the bowing and tow away, as applicable, of all the associated life rafts within the times allowed for embarkation as per SOLAS Ch.III/Reg. 21.1.3 and 31.1.5.

The on-board arrangements and installation of this MES is not part of the design appraisal or certificate and to be of the satisfaction of the Flag Administration.

Installation tests to be carried out in accordance with IMO Res.MSC.81(70), Part 2, item 7 and to be documented by the manufacturer. This does not preclude any further testing to additional requirements of the Flag Administration or those acting on their behalf.

Inflatable components or sections of the marine evacuation systems are to be service at intervals not exceeding twelve months by a person suitably qualified and authorized by the manufacturer.

Any electrical, pressurized and hydraulic components are only assessed as integrated parts of the VEDC but are not assessed individually. The electrical, pressurized and hydraulic components shall be designed to codes of practice to the satisfaction of the Flag Administration having regards to their locations and maximum ambient temperatures expected in service.

A full set of manuals and associated documents are to be provided onboard for use on all operations involved in the inspections, maintenance and resetting of the MES and associated equipment.

Type examination documentation

This certificate replaces MEDB0000097 Rev.15 (rev. 16 does not exist).

Drawings	Date
Drawings as per DNV approval letter for VEDC 2.5	2011-09-09
Drawings as per DNV approval letter for VEDC 2.3	2010-12-14
Drawings as per DNV approval letter for VEDC 2.2	2010-09-21
Drawings and calculations as per DNV approval letter for VEDC 2.1	2007-04-18
Test reports	Date
Test reports all witnessed by DNV /DNV GL:	
- Prototype test report VEDC 2.1 witnessed by DNV	2008-01-04
- Test report No. 1504 (Ice test)	2010-10-11
- Test report No. 1448 and 1495 (float free test)	2010-07-08 / 2010-08-19
- Test report Nos. 1621, 1447 and 1508 (deployment test)	2011-06-01 / 2010-04-27/
- Test report No. 1449/1452 and 1506/1507 (trim/ list test)	2010-11-26
- Test report No. 1046 and 1815 (capacity test)	2010-04-23
- Test report No. 1046 and 1815 (capacity test)	2010-10-04
- Test report No. 2020 – (wear test, replaces test report 1787 dated 2012-09-21)	2009-02-27
	2012-11-23
	2013-11-27
Design changes	Date
Viking Design change sheet no. 10268 (manual sledge release) + supporting test report witnessed by DNV:	2010-01-22
- Test report No. 1414 (deployment for testing the manual release of sledge)	
Viking Design change sheet no. 10281 (new VEDC 2.2 model developed)	2010-07-08
Viking Design change sheet no. 10283 (ice protection on sledge locking mechanism removed)	2010-09-17

Viking Design change sheet no. 10288 (new VEDC 2.3 model developed)	2010-11-30
Viking Design change sheet no. 10296 (hydraulic/pneumatic changed)	2011-11-15
Viking Design change sheet no. 10324 (100 kg added to sledge)	2013-09-23
Viking Design change sheet no. 10328 (chute aramid material wear test) + supporting test report witnessed by DNVGL: - Test report No. 2020 (2 times sliding test)	2013-11-27
Viking Design change sheet no. 10329 (chute material 50% - wear test) + supporting test report witnessed by DNVGL: - Test report No. 2021 (2 times sliding test)	2013-11-27
Viking Design change sheet no. 10343 (removal of MES raft container plastic)	2014-10-27
Viking Design change sheet no. 10353 (new fabric for chute outlet)	2015-06-17
Viking Design change sheet no. 10354 (position of chute angle changed)	2015-08-10
Viking Design change sheet no. 10372 (alternative D-ring for bowsing turn point) + supporting test reports witnessed by DNVGL: - Test report No. 2384 (strength test of bowsing line) - Test report No. 2277 (friction test of bowsing)	2016-02-12
Viking Design change sheet no. 10379 ((use of bowline knot for securing bowsing) + supporting test report: witnessed by DNVGL - 2384 (strength test for line for securing bowsing)	2016-02-12
Viking Design change sheet no. 10383 (sledge reinforcement for VEDC 2.2 and 2.7) + supporting drawings: - 16008254 rev.00 (sledge VEDC 2.7 – locking mechanism 2015 - L-profile reinforcement) - 16008101 rev.00 (sledge VEDC 2.2 locking mechanism 2015) - 16007831 rev.00 (sledge VEDC 2.7 locking mechanism 2015)	2016-04-28 2016-05-12 2016-02-29 2016-03-10
Viking Design change sheet no. 10407 (traffic light wireless implemented)	2017-08-29
Viking Design change sheet no. 10415 (electrical Andersen winch 72 STE, optional) Drawings including the electrical bowsing winch (ref. DC 10415): - 16011943 Rev.00 (VEDC 2.7) - 16011947 Rev.00 (VEDC 2.3) - 16011948 Rev.00 (VEDC 2.4) - 16011953 Rev.00 (VEDC 2.5) - 16011954 Rev.00 (VEDC 2.1) - 16011956 Rev.00 (VEDC 2.2)	2018-01-15
Viking Design change sheet no. 10435 (traffic light mod.)+ supporting documentation: - DNV GL Advisory Maritime – report no. 1-10119722, rev.2, test & root cause discovery review - Statement USCG, successful MES deployment with traffic light system generation 3.1 - Viking document: A0433 Traffic light Mechanical issues, 3.1 + referenced testing - Viking document: A0432 Traffic light Generation 3 + referenced testing	2018-11-06 2018-10-17 2018-11-01 2018-10-12
Viking Design change sheet no. 10437 + supplement DC10439 + supporting test reports witnessed by DNVGL: - Test report Nos. 2905, 2914, 2915 (3 x overpressure test) - Test report Nos. 2880, 2881, 2882, 2883, 2884, 2885 (seam strength tests)	2018-07-13 2018-12-10/11
Viking Design change no. 10440 – free board device + supporting test reports witnessed by DNVGL: - Test report No. 2989 - Test report No. 3004	2019-03-04 2018-12-20 2019-01-24
Viking Design change no. 10445 – New variant VEDC 2.8 with 150 DKS S30 + supporting documentation: Test report Nos witnessed by DNVGL.: - Test report No. 3040 (deployment by one person) - Test report No. 3039 (external doors 5 dry release operations) - Test report No. 3040 (deployment from stowage position) - Test report No. 3038 (liferaft float free / break free) 150 DKS S30 (ESI tests): - Test report No. 2987 (strength comparison of bowsing lashing connection) - Test report No. 3005 (float free) - Test report No. 3040 (5 times door operation) - Test report No. 3081 / 3082 (recording of humidity) - Test report No. 3084 (Vibration and damp heat cyclic test) - Test report No. 2986 /3075 (detailed inspection – S30) Drawings MES: - 42005390.000.00 Rev.00 dated 2019-03-22 – Stowed outer dimension - 42005388.000.00 Rev.00 dated 2019-03-22 – deployed position, 2 x 150DKS S30 VEDC 2.8 - 42005402.000.00 Rev.00 dated 2019-03-22 – launching sequence, 2 x 150 DKS VEDC 2.8 - 42005401.000.00 Rev.00 dated 2019-03-22 – Float free sequence, 2 x 150 DKS VEDC 2.8	2019-05-03
Viking Design change sheet no. 10446 – use of alternative hardener for MES system liferafts and slides – TM-93 + supporting documentation: - Report- strength of 'TM-93' - Design review – use of 'Beyond'	2019-03-19
Viking Design change sheet no. 10447 (extension of DC 10437, DC10438, DC10439, DC 10446)– Alternative hardener on patches for all liferaft and slide production – 'Beyond' and 'TM-93'+ supporting documentation:	2019-03-19

<ul style="list-style-type: none"> - Report – Strength of 'Beyond' - Report – Strength of 'TM-93' - Report – Use of Alternative hardener on MES patches - Design review – Use of 'Beyond' 	
<p>Viking Design change sheet no. 10450 (liferaft container for VEDC 2.3/2.7) + supporting test reports witnessed by DNVGL:</p> <ul style="list-style-type: none"> - Test report No. 1535 (drop test) - Test report No. 1536 (drop test) - Test report No. 1538 (drop test) - Test report No. 1539 (drop test) 	2019-04-12
<p>Viking Design change sheet no. 10452 (Change of handle position for free board device) + supporting documentation:</p> <ul style="list-style-type: none"> - Freeboard handle internal test report <p>Drawings showing the freeboard device handle:</p> <ul style="list-style-type: none"> - 14001333-1 - 14001333-2 - 14002195-1 - 14002195-2 - 14002195-3 - 14002195-4 - 16013631 rev.03 dated 2019-05-29, Right release system chute box VEDC - 16013647 rev.02 dated 2019-05-29, Left release System chute box VEDC 	2019-05-16 2019-05-03
<p>Viking Design change sheet no. 10453 (Hydraulic cylinder moving A-frame forward turned 180 degrees – for VEDC 2.2, 2.3, 2.5, 2.7 and 2.8) + supporting documentation and test report witnessed by DNVGL:</p> <ul style="list-style-type: none"> - Test report No. 3114 - Drawing No. 16008020 	2019-06-28
<p>Viking Design change sheet no. 10454 (freeboard device software update) + supporting test reports witnessed by DNVGL:</p> <ul style="list-style-type: none"> - Test report No. 3173 (5 x dry tilting tests) - Test report No. 3183 MES deployment normal height - Test report No. 3213 MES deployment at low height 	2019-09-17
<p>Viking Design change sheet no. 10456 (bowsing lashing connection with spliced rope) + supporting test reports witnessed by DNVGL:</p> <ul style="list-style-type: none"> - Test report No. 2987 (strength comparission bowsing lashing connection) - Test report No. 3083 (float free test) - Test report No. 3195 (lashing connection) - FMEA (bowsing lashing connection) 	2019-09-13
<p>Viking Design change sheet no. 10459 (changed packing method) + supporting test reports:</p> <ul style="list-style-type: none"> - Test report No. 3213 (deployment test) - Test report No. 3214 (2 x drop test) - Test report No. 3228 (deployment test) 	2019-06-12
<p>Viking Design change sheet no. 10460 (VEDC Lowering wire protection) + supporting test report nos witnessed by DNVGL.:</p> <ul style="list-style-type: none"> - Test report No. 3283 Deployment #2 - Test report No. 3284 Description of changes - Test report No. 3285 Deployment #3 - Test report No. A0485 Soft wire end - Test report No. A0486 Soft wire end at 35 degrees - Test report No. A0487 Deployment #1 - Test report No. A0488 Inflation between wires - Test report No. A0489 Round bar protection - Test report No. A0490 Shortened wire end - Test report No. A0491 Falling lowering wire with shortened wire end. <p>Drawing nos.:</p> <ul style="list-style-type: none"> - 16014009 rev.00 – wire guide - 16014010 rev.01 – wire end detail - 16014011 rev.00 – PE-HD brackets for round bar - 16014012 rev.00 – PE-HD brackets for round bar 	2019-11-07 2019-11-04 2019-11-06 2019-11-08 2019-11-07 2019-11-08 2019-11-04 2019-10-29 2019-10-29 2019-11-11 2019-11-11
<p>Viking Design change sheet no. 10461 (GIST stop wire and plates for chute box) + supporting test report nos. witnessed by DNVGL:</p> <ul style="list-style-type: none"> - Test report No. 3313 (deployment) - Test report No. A0501 (internal test) <p>Drawing nos.:</p> <ul style="list-style-type: none"> - 16000895 rev.7 (release plate) - 16012812 rev.3 (adjustable release plate foundation) - 16013842 rev.0 (wire for release plate) - ENG-2003015 Rev.1 (chute Protection foundation) 	2019-12-19 2019-11-14 2019-09-24 2019-09-24 2019-12-20

<ul style="list-style-type: none"> - ENG-20003007 rev.1 (side plate 1 foundation) - ENG-20003014 rev.1 (side plate 2 foundation) - ENG-20003017 rev.1 (side plate 3 foundation) - ENG-20003329 rev.1 (support angle left for side plates) - ENG-20003139 rev.1 (support angle right for side plates) 	<p>2019-12-20 2019-12-20 2019-12-20 2019-12-20 2019-12-20</p>
<p>Viking Design change sheet no. 10464 (C34 project VEDC 2.4.1 variant with 9 rings chute) + supporting test report nos. witnessed by DNV:</p> <ul style="list-style-type: none"> - Test report No. 3436 (§12.6.1_C34_VEDC 2.4.1_Deployment 5,8m) - Test report No. 3442 (§12.6.1_C34_VEDC 2.4.1_Deployment 19,7m) - VEDC 2.4.1 chute test trigger line length - VEDC 2-4-1 Internal test C34 test_5.8m <p>Drawing nos.:</p> <ul style="list-style-type: none"> - 309811_01 (VEDC under unfavourable conditions) - 42005747.0 (VEDC 2.4.1 removable funnel) - 42005241.01 Rev.1 (VEDC Funnel Long Left) - 42005245.01 Rev.1 (VEDC Funnel Long Right) 	<p>2020-07-10 2020-02-07 2020-07-09 2020-06-26 2020-06-17</p>
<p>Viking Design change sheet no. 10465 (VEDC S30 chuterast (150DKS) packing adjustment) + supporting test report nos. witnessed by DNV:</p> <ul style="list-style-type: none"> - A0469 (internal test report) - Test reports under DC10459 	<p>2020-03-16 2020-01-08</p>
<p>Viking Design change sheet no 10474 – Alternative chute lines (Dyneema SK78 - 9 mm line) and supporting test reports witnessed by DNV:</p> <ul style="list-style-type: none"> - Test report No. 3435 (deployment by one person) - Test report No. 3436 (§12.6.1_C34_VEDC 2.4.1_Deployment 5,8m) - Test report No. 3442 (§12.6.1_C34_VEDC 2.4.1_Deployment 19,7m) 	<p>2020-07-29 2020-07-07 2020-02-07 2020-07-09</p>
<p>Viking Design change sheet no 10478 (Mechanical design upgrade VEDC Phase 1 applicable for VEDC 2.1, 2.2, 2.3, 2.4, 2.5, 2.7, 2.8) and supporting documentation and test report witnessed by DNV:</p> <ul style="list-style-type: none"> - Test report No. 3512 (deployment test) <p>Drawing Nos.:</p> <ul style="list-style-type: none"> - ENG-20054489 (Hydraulic & Pneumatic system) - ENG-20038348 (PID) - ENG-20037512 (Rocker arm valve) - ENG-20036530 (Activation bracket) - ENG-20036695 (Bleeder valve) - ENG-20037308 (Bleeder valve activation arm) 	<p>2020-09-07 2020-09-07</p>
<p>Viking Design change sheet no 10509 (VEDC system release pressure reduced to 130 bar for VEDC 2.2 /2.5 /2.7 and 2.8) and supporting documentation and test report witnessed by DNV:</p> <ul style="list-style-type: none"> - Test report No. 3926 witnessed by DNV - Drawing No.ENG-20110838 Rev.0 (P&ID) dated 2021-11-05 	<p>2021-11-11</p>
<p>Viking Design change sheet no 10522 (Routing of steering line in foam socket in container cut out) and supporting documentation and test report witnessed by DNV:</p> <ul style="list-style-type: none"> - Test report 4177 (deployment test) 	<p>2022-10-10</p>
<p>Other</p>	<p>Date</p>
<p>Product description 'VEDC Type Variants', Rev.0</p>	<p>2020-07-10</p>
<p>Operation manual</p>	<p>May 2019</p>

Tests carried out

Test documentation in accordance with recommendation on testing of Lifesaving Appliances, IMO Res. MSC 81(70), part 1.

Marking

The product is to be indelibly marked with name and address of manufacturer, type designation, dimensions and date of manufacture, the MED Mark of Conformity and USCG Approval Number (see first page).

The marking for the MES container and marine evacuation system shall be according to LSA Code, item 6.2.4 and 6.2.5.