

TYPE EXAMINATION CERTIFICATE

This is to certify:**That the Composite Handrails**with type designation(s)
MARRS® - Offshore Handrail System

Issued to

**NOV FGS Pipexp®
Plymouth, United Kingdom**

is found to comply with

NORSOK Standard N-001 Integrity of offshore structures, Rev. 8, September 2012**NORSOK Standard M-001 Materials selection, Edition 5, September 2014****NORSOK Standard N-003 Action and action effects, Edition 3, January 2017****NORSOK Standard C-002 Architectural components and equipment, Edition 3, June 2006****NORSOK Standard S-001 Technical safety, Edition 4, February 2008****Det Norske Veritas' Offshore Standard DNV-OS-C501, Composite Components, October 2013**

Application :**Offshore oil and gas installations.**Issued at **Høvik** on **2018-03-20**This Certificate is valid until **2023-03-19**.for **DNV GL**DNV GL local station: **Southampton**Approval Engineer: **Pedro Barros**

**Rikard Törnqvist
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 Examination Certificate and not to the approval of equipment/systems installed.



Product description

MARRS® - Offshore Handrail System.

MARRS = Multi Angle Rapid Railing Systems

MARRS® - Offshore Handrail System is comprised of pultruded profiles and compression moulded connections.

- The fittings are manufactured by **Pipexpx® Plymouth**, Pipex House, Devon Enterprise Facility, 1 Belliver Way, Roborough, Plymouth, PL6 7BP, England, UK
- The system is assembled by **Pipexpx® Scotland**, 1 Ashey Drive, Bothwell, Glasgow G71 8BS, Scotland, UK. It can also be assembled in the field from a site package as required.
- All bolts/fixings are A4-70 stainless steel.

Description of the system:

- MARRS® handrails (phenolic resin based), 1100mm high, posts at 1500mm centres maximum
- MARRS® components (in-house manufacture)
- As per drawings ref Pipexpx® PX-8020-003 (Standard arrangement Drawing, 24/07/14), Pipexpx® 7049-PSC001 (Typical MARRS® Handrail, 20.06.2012).
- Tubes and inserts: made from glass fibre reinforced phenolic resin.
- Fittings adhesives: Pliogrip™ 7770 Urethane adhesive or Araldite® 2015 Epoxy paste adhesive.
- UV resistant paint coatings: Selemix Direct (polyurethane) or Interfine 691 (acrylic epoxy).

Place of manufacture

NOV FGS Pipexpx®, Pipex House, Devon Enterprise Facility, 1 Belliver Way, Roborough, Plymouth, PL6 7BP, England, UK

DNV GL local station: Southampton

Pipexpx® Scotland, 1 Ashey Drive, Bothwell, Glasgow G71 8BS, Scotland, UK

DNV GL local station: Glasgow

Application/Limitation

The **MARRS® - Offshore Handrail System** is intended for offshore oil and gas installations as a stair and level handrail system. The acceptance for use of the **MARRS® - Offshore Handrail System** in specific projects are to be sought from involved regulatory bodies.

- NORSOK C-002 Ed. 3 Sept. 2015: Compliance with chapters 4.2 (Documentation), 4.5, 6.1-6.6. Limitation: chapter 4.2, fire performance documentation has been provided, compliance to be evaluated per project specific conditions. Limitation: chapter 6.7, product not applicable to flexible barriers and gates.
- NORSOK M-001 Ed. 5 Sept. 2014: Compliance with paragraphs 5.4.3 (DNV-OS-C501), 5.4.1, 6.2.3. Limitation: chapter 5.4.3, fire performance documentation has been provided, compliance to be evaluated per project specific conditions.

NORSOK N-001 Ed. 8 Sept 2012: Compliance with chapters 4.7, 6.0 and 7.0.

Limitation: Compliance with relevant national and international regulations per chapter 4.1 to be evaluated per project specific conditions.

- NORSOK N-003 Ed.3 Jan. 2017: Compliance with chapters 5.3, 8.2. Limitation: chapter 8.0, fire integrity documentation has been provided, compliance to be evaluated per project specific conditions.
- NORSOK S-001 Ed. 4 Feb. 2008: Compliance with chapter 14.4.6. Limitation: chapter 4.7 and 6, loading to be evaluated per project specific conditions.

Limitation: chapter 19.4.5 and 21.5.1 documentation to be evaluated per project specific conditions.

- DNV-OS-C501 Ed. Nov. 2013: Compliance with Sec. 2 3.3.2, 3.4.2 and 3.5.2; Sec. 3 11.2; Sec. 4 1.6, 2.4, 3.11, 2.4, 8.9; Sec. 6 2.2; Sec. 8 2.1.4, 2.2, 2.3, 3.0, 4.0, 5.0; Sec. 10 1.1.1, 1.1.3, 1.1.5, 2.0, 2.1.3, 2.2.1.

Loads:

1.5 kN/m horizontal distributed load on top rail, 1.0 kN point load on top rail, per NORSOK C-002 and NORSOK N-003. Tested between -40°C to +60°C.

Ageing:

Salt laden atmosphere per BS EN 60068-2-52:1996 Test Kb, at severity level 1.

Fire Performance:

Smoke Generation and Toxicity: documentation to be reviewed per project specific conditions.

Flame Spread: documentation to be reviewed per project specific conditions.

Limitations:

Fire performance limitations to be evaluated per project specific conditions.

Type Examination documentation

Tests carried out

Tests have been carried out as per the **Type Examination documentation**.

Marking of product

Product shall be marked with manufacturer's name; **Pipexpx®** and type designation; **MARRS®**.

Periodical Assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Examination is complied with and that no alterations are made to the product design or choice of materials.

Assessment to be performed after 2 and 3.5 years (Certificate Retention) and at renewal after 5 years (Certificate Renewal).

The main elements of the Periodical Assessment are to:

- Ensure that **Type Examination documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Examination documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and the DNV GL Type Examination Certificate.

END OF CERTIFICATE