



Certificate No:
TAD00001GC

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Fitting

with type designation(s)

Washpipe for DDM 1000 2M, 3.5" 7500psi V1, QA 16-255, Washpipe for DDM 1000 2M, 3.5" 7500psi V2, QA 16-234, Washpipe for DDM 1000 2M, 4 1/8", 7500psi, QA 16-320

Issued to

MHWirth GmbH

Erkelenz, Nordrhein-Westfalen, Germany

is found to comply with

DNV-OS-E101 – Drilling facilities, Edition July 2021

Application :

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

Issued at **Høvik** on **2023-07-04**

This Certificate is valid until **2028-07-03**.

DNV local station: **Essen**

for **DNV**

Approval Engineer: **Thomas Henrik Tranesen**

.....
Per Esvall
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.



Form code: TA 251

Revision: 2021-03

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Reference standards

ASME B31.3-2020 Process piping, ASME Code for Pressure Piping, B31

Product description

Washpipe, 3.5" (2 off) and 4 1/8" (1 off) designed for application with top drive gearbox DDM 1000 2M and 1000 2M ENH, to route mud flow from the stationary gooseneck into the rotating main shaft by using dynamic wash pipe sealing.

Design limitations

Design pressure: 7500 psi (517 bar)
Testing pressure: 11250 psi (776 bar)
Design fatigue life: 20 years
Max rotation speed: 250rpm

Design limitations for the sealing parts:

Shelf life: 5 years (see Comments)
Design temperature: -23°C to +135°C
pH range: 4 to 14
Max rotation speed: 375 fpm / 1.905 mps
Max working pressure: 7500psi

Type Approval documentation

Tests carried out

1. Impact testing of the materials shall be carried out at or below minimum design temperature in accordance with DNV-OS-E101 Ch.2 Sec.2.
2. Functional and pressure testing shall be carried out in accordance with DNV-OS-E101 Ch2. Sec.8 §3.3 and §3.5.
3. Non-destructive examination shall be carried out in accordance with DNV-OS-E101 Ch2. Sec.8 §3.
4. Each product is to be surveyed during fabrication in accordance with the requirements for equipment of Category I as defined in DNV-OS-E101 Drilling Plant, followed by issuance of Product Certificate. If the intended installation is DNV classed, then this automatically means DNV Product Certificate. Fabrication records are to be maintained in accordance with DNV-OS-E101 Ch.3 Sec.3.

Comments

- This approval assumes that manufacturer's instructions for installation, testing and operation of DDM Gear Box are followed.
- Lifetime of the sealing materials shall be carefully monitored starting from molding of the parts, ref. design limitations.
- Interaction of the sealing material with mud composition may affect sealing properties. Manufacturer's maintenance procedures shall be followed.

Marking of product

Each product shall be marked with at least:

- Reference to type approval certificate,
- Design pressure.

Periodical assessment

For retention of the Type Approval, DNV's representative shall carry Product Audits in accordance with DNV-CP-0338. This is in order to verify that the conditions for the type approval are complied with, ref. DNV-CP-0338, DNV type approval scheme.

END OF CERTIFICATE