

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Mud and Cementing Equipment**

with type designation(s)

**DB1004A 4:1 PRESSURE DEBOOSTER,
15,000 PSI MAWP STANDARD SERVICE;
10,000 PSI MAWP SOUR SERVICE**

Issued to

**National Oilwell DHT L.P.
Cedar Park, TX, USA**

is found to comply with

DNVGL-OS-E101 – Drilling facilities, Edition January 2018**DNVGL-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2018****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****The TAC is used to replace TAD000000J**Issued at **Houston** on **2019-10-14**This Certificate is valid until **2024-10-13**.for **DNV GL**DNV GL local station: **Certification & Inspection
Services**Approval Engineer: **Bo Cui**

**Christian Nilsen
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.



Job Id: **262.1-011393-4**
Certificate No: **TAD000016D**

Product description

- DB1004A 4:1 Pressure Debooster:
- 15,000 psi MAWP Standard Service
- 10,000 psi MAWP Sour Service

Reference Standards

- ASME Section VIII, Division 1 & 2, Boiler & Pressure Vessel Code, 2013 edition
- NACE MR0175, Petroleum and Natural Gas Industries - Material for Use in H₂S – Containing Environments in Oil and Gas Production, 2nd Edition
- ASME B1.1, 1989 Edition, Unified Inch Screw Threads (UN and UNR Thread Form)
- API 6A, Specification for Wellhead and Christmas Tree Equipment, 20th Edition

Application/Limitation

Design Variable	Value	Equivalent
Maximum Allowable Working Pressure (Standard)	15,000 psi	(1034 bar)
Maximum Allowable Working Pressure (Sour)	10,000 psi	(690 bar)
Minimum Design Temperature	-4°F	(-20°C)
Corrosion Allowance	None	

Type Approval documentation

Fabrication procedures

Procedures related to testing, welding, NDT, etc are to be reviewed/approved by DNV GL's local surveyor

Marking of Product

For traceability to this Type Approval Certificate the products are as a minimum to be marked as follows:

1. Serial Number
2. Manufacturer's name and trademark
3. Additional marking at manufacturer's option

Certificate retention survey

For retention of the Type Approval, DNV GL's surveyor shall perform periodical assessment in accordance with DNV GL's Class Programme DNVGL-CP-0338, Section 4.

Other conditions/comments

- The elastomeric seal material shall withstand both the medium and the maximum/minimum working temperature.
- For components in sour (H₂S) service, hardness testing on all wetted surfaces is required to comply with ISO 15156/NACE MR0175-2002.

END OF CERTIFICATE