

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

COMMANDER 1000 CEMENTING HEAD

Issued to

**Halliburton Energy Services
Duncan, OK, 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.****This certificate is to replace TAC D-5254**Issued at **Houston** on **10/07/2019**This Certificate is valid until **10/06/2024**.DNV GL local station: **Houston, Approval CMC**for **DNV GL**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: **262.1-016021-3**
Certificate No: **TAD000016H**

Design Code / Standard used as references

- API Specification 6A, Specification for Wellhead and Christmas Tree Equipment, 20th Edition, October 2010
- ASME Boiler and Pressure Vessel Code, Section VIII, Division II: Alternate Rules, July 1, 2004 Edition
- API Recommended Practice 7G, Recommended Practice for Drill Stem Design and Operating Limits, 16th Edition, August 1998

Product description

Commander 1000 Top Drive Cementing Head

Application/Limitation

Maximum Working Pressure	: 10,000 psi	(68.9 MPa)
Maximum Tension Load @ Working Pressure	: 2,000,000 lbs	(8896.4 kN)
Minimum Design Temperature	: -4°F	(-20°C)
Maximum Design Temperature	: 140°F	(60°C)
Corrosion allowance	: 0.06 Inch	(1.5 mm)
Service	: Cementing System, Cementing Head	

Type Approval documentation

Drawings :

*for reference only

Calculations:

Material Specifications:

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. Safe Operating Load

Periodical assessment

In order to maintain the validity of the type approval certificate, periodical assessment should be carried out according to DNVGL-CP-0338.

END OF CERTIFICATE