DNV·GL

Certificate No:
TAD000008K

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Well Testing Equipment

with type designation(s)
10K/15K PSI INNER CONTROL MANDREL,
DICM-AA, P/N: 100284780 REV AG,
DICM-BA, P/N: 100234235 REV AJ

Issued to
Schlumberger Technology Corp.
ROSHARON TX, United States

is found to comply with
DNVGL-OS-E101 – Drilling plant, Edition July 2015
and DNV GL AS' understanding of the implementation and interpretation of:
PSA's "Regulations relating to design and outfitting of the facilities etc. in the petroleum activities" (THE FACILITIES REGULATIONS), Last amended 16 December 2014, Ch.VIII

Application :

See Page 2

This Certificate is valid until **2021-01-13**.

Issued at **Houston** on **2016-01-14**

for **DNV GL**

DNV GL local station: **Approval CMC – Houston**

Approval Engineer: **Pari Natarajan**

Mark Miser
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.

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Product description

- Assembly, 10 ksi Inner Control Mandrel, DICM-AA, P/N: 100284780, Rev AG
- Assembly, 15 ksi Inner Control Mandrel, DICM-BA, P/N: 100234235, Rev AJ

Design codes/standards used as references

- API 5CT, Specification for Casing and Tubing, Ninth Edition
- API 5C3, Bulletin on Formulas and Calculations for Casing, Tubing, Drill Pipe, and Line Pipe Properties, 6th Edition 1994

Application/Limitation

Design Parameter	DICM-AA	DICM-BA
Max Internal Working Pressure	10,000 psi	15,000 psi
Max Internal Test Pressure*	12,500 psi	18,750 psi
Max Hanging Load at Working Pressure	400,000 lbf	500,000 lbf
Max Hanging Load at 0 psi	1,000,000 lbf	1,200,000 lbf
Min Design Temperature	32 °F	32 °F
Max Design Temperature	350 °F	350 °F
Corrosion allowance	0.006 in	0.006 in
Service	H_2S	H_2S

* Test pressure is limited by the premium end connection, which is a proprietary design of VAM. The claimed rating of this connection has not been evaluated by DNV GL for compliance with any applicable codes.

Type Approval documentation

Tests carried out

- Certificate of Test for DICM-AA dated 6th July 2011

Marking of product

For traceability the following marking is to be carried out on each product:

1. Serial No.
2. Marking as specified in API references.
3. Additional marking at the manufacturer's discretion

Periodical assessment

For retention of the Type Approval, DNV GL's surveyor shall perform a survey in accordance with DNV GL Type Approval scheme, DNVGL-CP-0338, Section 4.

Other conditions/ comments

- Procedures related to testing, welding, NDE, and other quality control requirements are to be reviewed/approved by DNV GL's local surveyor.
- Each product is to be surveyed during fabrication in accordance with the requirements for Category 1 equipment as defined in DNV GL's Offshore Standard DNVGL-OS-E101 'Drilling Plant', followed by issuance of a Product Certificate. If the intended installation is DNVGL classed, it means DNV GL product certificate is required. Fabrication records are to be maintained in accordance with DNVGL-OS-E101 Ch.3 Sec.3 [2].
- Other part numbers or updated revisions may be acceptable under this certificate provided critical aspects of the design remain the same. Changes shall be documented and approved (via Engineering Change Notice or similar) by the Manufacturer's Engineering and/or Quality department as appropriate. DNV GL's local surveyor shall verify the change before issuance of Product Certificate.
- DNVGL Ref. Project No. PP124135 CTR-6VL04087-1

End of Certificate