DNV·GL

Certificate No:
TAD00001CK

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Mud and Cementing Equipment

with type designation(s)
High Pressure Mud Hoses and Cement Hoses

Issued to
Techfluid Yantai Limited
Yantai, Shandong Province, China

is found to comply with
DNVGL-OS-E101 – Drilling facilities, Edition January 2018

Application :

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

Reference standard:
API Spec. 7K "Drilling and Well Servicing Equipment", 6th edition, December 2015
API Spec. 16C "Specification for Choke and Kill Systems" 1st edition (used for fire testing requirements only)

Issued at **Høvik** on **2020-11-17**
This Certificate is valid until **2025-11-16**.
DNV GL local station: **Oslo Pressure Equipment**

Approval Engineer: **Sinisa Sedlan**

for **DNV GL**

Zeinab Sharifi
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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.

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Product description

Mud hose assemblies (Rotary hose, vibrator hose, or jumper hose) and cement hose assemblies used for conveyance of cement slurries at high pressure, including:

- bonded flexible hose
- end termination
- end connection:
  - API Spec 16A hubs
  - Hammer Union Connectors Fig 1002 Female, Fig 1004 Female, Fig 1502 Female and Fig 2202 Female

Application/Limitation

Design family	Max design pressure [psi]	Internal diameter (ID) [in]	Service	FSL level	Temperature range (API 7K)	Min Design Temp [°C]	Max Design Temp [°C]
2-Cable Hose Body	5000	2", 2.5", 3", 3.5"	Mud	1	II	-25	+100
4-Cable Hose Body	5000	4", 5"	Mud	2	II	-25	+100
	7500	2.5", 3", 3.5", 4", 5"					
4-Cable Hose Body	10000	2", 2.5", 3"	Cement	0	II	-25	+100
6-Cable Hose Body	15000	2", 2.5", 3"	Cement	0	II	-25	+100
4-Cable Hose Body	5000	4"	Mud	2	III	-25	+121
	7500	2.5", 3", 4", 5"					

Type Approval documentation

Tests carried out

Design verification testing according to API Spec. 7K, fire testing, Hammer Union qualification testing

Marking of product

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

- All equipment shall be clearly marked with identification and serial number which relates the equipment to certificates and fabrication documentation.
- Markings in accordance with API spec. 7K, 6th ed.

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.