DNV·GL

Certificate No:
TAD00001BT

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Kill and Choke Equipment

with type designation(s)
Choke & kill 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.

Issued at **Høvik** on **2020-11-10**
This Certificate is valid until **2025-11-09**.
DNV GL local station: **Shanghai Verification**

for **DNV GL**

Approval Engineer: **Mohsen Mohebbi**

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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Job Id: **262.1-032217-1**
Certificate No: **TAD00001BT**

Product description

Choke and kill hoses with bonded coupling designed according to API 16C, Choke & Kill Equipment, 2nd edition, March 2015.
End connections are API 16A Hub/Clamp connectors and API 6A flanges.

Application/Limitation

Following hoses might be used as general choke and kill services, sour service or well test service:

Hose Designation	Inside Diameter	Working pressure MPa (psi)	Temperature range (° C)	Numbers of wire layer	MBR	FSL
JYG-SZ-51x34.5	2"(51mm)	34.5(5000)	-20 to100 (B)	4	800 mm	3
JYG-SZ-76x34.5	3"(76mm)	34.5(5000)	-20 to100 (B)	4	1000 mm	3
JYG-SZ-51x69	2"(51mm)	69(10000)	-20 to100 (B)	4	900 mm	3
JYG-SZ-76x69	3"(76mm)	69(10000)	-20 to100 (B)	4	1397 mm	3
JYG-SZ-76x103.5	3"(76mm)	103.5(15000)	-20 to100 (B)	6	1500 mm	3
JGG-SZ-76x69	3"(76mm)	69(10000)	-20 to130	6	1200 mm	3
JGG-SZ-102x69	4"(102mm)	69(10000)	-20 to130	6	1500 mm	3
JGG-SZ-51x103.5	2"(51mm)	103.5(15000)	-20 to130	6	1200 mm	3
JGG-SZ-64x103.5	2-1/2" (64mm)	103.5(15000)	-20 to130	6	1300 mm	3
JGG-SZ-76x103.5	3"(76mm)	103.5(15000)	-20 to130	6	1300 mm	3

Manufacturing of body structures and assembling of end fitting shall be done at Techfluid Yantai Limited.

Type Approval documentation

Tests carried out

Selected hoses have been passed following validation testing:
Hydrostatic internal pressure according to API 16C ed. 2 clause B.12.2.1
Bending flexibility test according to API 16C ed. 2 clause B.12.2.2
Burst test according to API 16C ed. 2 clause B.12.2.3
Exposure test according to API 16C ed. 2 clause B.12.3
Fire test according to API 16C ed. 2 clause B.12.4
High temperature exposure test according to API 16C ed. 2 clause B.12.5

Conditions and Comments

- Each hose is to be surveyed during fabrication in accordance with the requirements for equipment of Category I as defined in DNV GL's Offshore Standard DNVGL-OS-E101 Drilling Plant, followed by issuance of Product Certificate. Fabrication records are to be maintained in accordance with DNVGL-OS-E101 Ch.3 Sec.3, Clause 2.
- NDT of the coupling assembly shall be in accordance with API 16C, 2nd edition, Clause 7.4.4.
- The end couplings that are NOT according to recognised international standard (such as API 6A or API 16A), for example, but not limited to, Hammer Lug unions and Grayloc hubs, will need to be in compliance with DNVGL-OS-E101. For this suitability for all internal and external loading, shall be proven for each individual hose. Certification of these end couplings shall be according DNVGL-OS-E101:2018 section 3 Table 15. This type approval certificate does NOT cover compliance with DNVGL-OS-E101, for NOT standard end couplings, this shall be established separately.
- This document may be used as part of the documentation required to comply with European Union (EU) Directives referenced in PSA's Acts, regulations and provisions for the petroleum activities. It should however be noted that the scope covered by this document does not necessarily cover all aspects required to issue the EU Declaration of Conformity and to affix the

CE-mark. It is the manufacturer's/operator's responsibility to ensure compliance with relevant EU Directives.

Production testing

- Production testing as described in API spec. 16C shall be followed.

- Installation and bonding of end terminations on hose bodies shall be according to procedures written and maintained by Techfluid Yantai Limited.

Certification

The hose assemblies shall be delivered with DNV GL product certificate.

Material certificates for the hose reinforcing cables and coupling assembly shall be in accordance with DNVGL-OS-E101 Ch.3 Sec.2 [3.2.1].

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. 16C, 2nd 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.