DNV·GL

Certificate No:
**TAD000017N**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Marine Riser Equipment**

with type designation(s)
**Pin & Box for Choke and Kill, and auxiliary lines**

Issued to
**SUB SEA SERVICES AS**
**STAVANGER, Norway**

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 :

**See next page.**

Issued at **Høvik** on **2020-01-23**
This Certificate is valid until **2025-01-22**.
DNV GL local station: **Oslo Drilling Systems**

Approval Engineer: **Nishant Koti**

for **DNV GL**

**Per Esvall**
**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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## Reference Standards

- API Spec 16F, Specification for Marine Drilling Riser Equipment, 2nd Edition, 2017.
- API Spec 16C, Choke and Kill Equipment, 2nd Edition, 2015
- ASME B31.3, Process Piping, 2013
- NACE MR0175, Petroleum and Natural Gas Industries – Materials for use in $H_2S$Containing Environments in oil and gas production

## Product description

The pin and box are the mating connection on the C&K, Booster and Hydraulic Lines on a drilling riser.

## Application/Limitation

| Design Parameter | Value | Equivalent |
|---|---|---|
| Max rated working Pressure C/K | 15,000 psi | 1,034 bar |
| Max rated working Pressure, Booster | 7,500 psi | 517 bar |
| Max rated working Pressure, Hydraulic | 5,000 psi | 345 bar |
| Hydrostaic test pressure | 1.5 * Max rated working pressure | |
| Min fluid temperature | 0°F | -18°C |
| Max fluid temperature | 180°F | 82°C |
| Max fluid temperature, Hydraulic | 180°F | 82°C |
| Service, C/K | Sour | |
| Service, Booster | Sour | |
| Service, Hydraulic | Standard | |
| Corrosion allowance | 0.118” | 3mm |

## Type Approval documentation

## Tests carried out

Design Validation Test per API 16C, Annex B for non-metallic seals:

- HNBR N4007-95 T0606075 – Compatibility testing to API 16C-15, Annex B.9.4.4 – dated 01/26/2017 Rev 1, P.O. No. 34312-000, W/O No. PAR007-10-20-66435-1
- Design validation test per API 16C, Annex B.9.4.3.5 - TR-SSS-125969-14192_Rev.0 for seal in C/K & Booster lines – HNBR N4007A95

## Marking of product

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

- Part No.
- Serial No.
- Rated Pressure capacity
- Manufacturers Name or Mark

## Other conditions and comments

- All wetted components shall be tested and verified for hardness per NACE MR-0175.
- Non-metallic seals delivered shall be be provided with documentation complying with API 16C, Sec 7.4.11.
- The external surfaces of C&K Lines shall be suitably protected from external corrosion, see API 16F, Sec 9.1.3.1

- Hydrostatic proof testing of Choke & Kill, auxiliary lines shall be performed in accordance with API 16F, Sec 9.2.1.
- The Pin & Box connections shall undergo function testing per DNVGL-OS-E101, 2018, Ch.3, Sec.8 §3.5 after installation.
- Each product 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 facilities, followed by issuance of Product Certificate. If the intended installation is DNV classed, then this automatically means DNV Product Certificate. Fabrication records are to be maintained in accordance with DNVGL-OS-E101 Ch.3, Sec.3, 1.1.4.

## Certificate Retention Survey

For retention of the Type Approval, DNV GL's representative shall carry out biennial Product Audits in accordance with DNV GL Type Approval Scheme DNVGL-CP-0338, Chapter 4, dated Oct 2015.

END OF CERTIFICATE