

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

**100063330 - (Revision I) - TEE,
101213912 - (Revision D) - NUT,
100060376 - (Revision NY) - BUSHING,
101213911 - (Revision B) - SPACER**

Issued to

**Halliburton Energy Services
Houston, TX, USA**

is found to comply with

DNV-OS-E101 – Drilling facilities, Edition July 2021**DNV statutory interpretations DNV-SI-0166 – Verification for compliance with Norwegian
shelf regulations, Edition July 2021****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed
by DNV GL.**Issued at **Houston** on **2022-01-05**This Certificate is valid until **2027-01-04**.for **DNV GL**DNV GL local station: **Certification & Inspection
Services**Approval Engineer: **Bo Cui****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.

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.



Job Id: **262.1-035189-1**
Certificate No: **TAD00001DC**

Product description

100063330 – (Revision I) – TEE: 15000 PSI WP, 2 INCH FIGURE 1502 THREAD X 2 INCH FIGURE 1502 THREAD X 2 INCH FIGURE 1502 NUT SIDE PORT
101213912 – (Revision D) – NUT: Manifold Connection for use with Halliburton Lo-Torq Valves, Compact Plug Container, 10.935 Spacing; 15000 PSI WP
100060376 – (Revision NY) – BUSHING: Manifold Connection, for use with FMC Valves, Compact Plug Container, 10.935 Spacing; 15000 PSI WP
101213911 – (Revision B) – SPACER: Manifold Connection, for use with Halliburton Lo-Torq Valves, Company Plug Container, 10.935 Spacing; 15000 PSI WP

Application/Limitation

For Tee/Nut/Bushing/Spacer

Minimum Design Temperature (operating)	: -20 °F	: -29°C
Maximum Design Temperature	: 225 °F	: 107°C
Maximum Working Pressure	: 15,000 psi / 20,000 psi*	: 103.4 MPa / 138 Mpa
Fluid Conducted	: Oil and Gas Well Cementing Fluids : Oil and Gas Well Drilling Fluids : Oil and Gas Well Stimulation Fluids : Oil and Gas Well Produced Hydrocarbons : Water	

*Component rating is individually specified in the description of the part

Type Approval documentation

Tests carried out

Test in accordance with Halliburton test procedure.

Test carried out on Tee PN.10063330 dated Sep. 24th, 2021, with reference to DNV job No. A0978185

Test carried out on Nut/Bushing/Spacer dated May 19th, 2021, with reference to DNV job No. A0978181

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. Additional marking at manufacturer's option

Periodical assessment

1. For retention of the Type Approval, DNV's surveyor shall perform a retention survey after two years (+/- 90 days) and after 3.5 years (+/- 90 days) in accordance with DNV Type Approval Scheme DNVGL-CP-0338.

2. This certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in <https://approvalfinder.dnvgl.com>.

End of Certificate