Certificate no.:
TAD00001N6

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Mud and Cementing Equipment

with type designation(s)
Cement Head, CUH-335, Surface Dart Launcher

issued to
Schlumberger Technology Corporation
Sugar Land, 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.

Issued at **Houston** on **2024-06-06**
This Certificate is valid until **2029-06-05**.
DNV local unit: **Houston - Systems & Components**

Approval Engineer: **Parna Deljo**

for **DNV**

.....

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

Product description
CUH-335 Surface Dart Launcher

Design Codes/ Standards Used as References
- API 7-2, Threading and Gauging of Rotary Shouldered Connection, 2nd edition.
- API RP 7G, Recommended Practice for Drill Stem Design and Operating Limits, 16th edition.
- API 6A, Specification for wellhead and Tree Equipment, 21st edition.

Application/Limitation

Design Parameters	Value	(Equivalent)
Maximum Working Pressure	: 10,000 psi	(69.0 MPa)
Hydrostatic Test Pressure	: 15,000 psi	(103.5 MPa)
Maximum Tensile Load @ 0 psi	: 2,500,000 lbf	(11120 kN)
Maximum Tensile Capacity[1] at Maximum Working Pressure and 62,593 ft-lbf maximum torsional load for connection	: 1,800,000 lbf	(8007 kN)
Maximum Torsional Load for 6 5/8 FH End connection	: 62,593 ft-lbf	(84,864.7 J)
Minimum Design Temperature	: -22°F	(-30°C)
Corrosion Allowance	: 0.10 in	(2.54 mm)
System	: Well Control System; BOP	
Services	: Standard	

Note 1: All operating conditions for the product shall be within the limits specified in the Combined Loading Curves reported by the manufacturer in the design package listed under "Calculations." Capacities may be further limited by end connections.

Type Approval documentation

Tests carried out
Refer to project A1485452.

Marking of product
For traceability the following marking is to be carried out on each product:
1. Serial No.
2. Manufacturer's name or trademark
3. Additional Marking at the manufacturer's discretion

Periodical assessment
Periodical assessments for type approvals will be required after two years (+/- 90 days) and after three-and-a-half years (+/- 90 days) in accordance with DNV-CP-0338, Section 4.

Other Conditions/Comments
1. Procedures related to testing, welding, NDT, and other quality control requirements are to be reviewed/approved by DNV's local surveyor.
2. When DNV product Certification is required, each product is to be surveyed during fabrication in accordance with the requirements for Category I equipment as defined in DNV's Offshore Standard DNV-OS-E101.
3. The following items are excluded from this design review:
    - Nut, Union 2" Fig 1502
    - Nut, Union 3" Fig 1502
    - Tattle Tale
    - Motors
4. DNV ref: A1536961

END OF CERTIFICATE