Certificate no.:
TAD00001RF

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Valve

with type designation(s)
20K psi Upper IBOP P/N: 19089357-003; 20K psi Lower IBOP P/N: 19089358-003

issued to
National Oilwell Varco, L.P. - Rig Technologies Division - Mexicali
Mexicali, BC, Mexico

is found to comply with
DNV-OS-E101 – Drilling facilities, Edition July 2024
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 **2025-04-07**
This Certificate is valid until **2030-04-06**.
DNV local unit: **Long Beach**

for **DNV**

Approval Engineer: **Xiangwen Maggie Wang**

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 USD 300 000.

Product description
Upper & Lower Kelly Valves as defined in API Specification 7-1.

Design codes/standards used as references
1. API Specification 7-1, *Rotary Drill Stem Elements*, 2nd Edition
2. API Specification 7-2, *Threading and Gauging of Rotary Shouldered Thread Connections*, 2nd Edition
3. API RP 7G, *Recommended Practice for Drill Stem Design and Operating Limits*, 16th Edition

Note: While 20,000 psi working pressure is outside the scope of API 7-1, the specification's methodology has been applied and deemed satisfactory

Application/Limitation
Upper IBOP P/N 19089357-003

Design Parameter	Value
Minimum Design Temperature	: -4°F
Maximum Working Pressure	: 20,000 psi
Maximum Working Pressure while Drilling (w/ combined loads)	: 10,000 psi
Maximum Tensile Capacity*	: 3,000,000 lbf
- At Maximum Working Pressure while drilling and 105,000 ft-lbf maximum torsional load	
Maximum Continuous Drilling Torque	: 105,000 ft-lbf
API 7-1 Service Class	: 1
Sealing System Temperature Range	: Not Required for Service Class 1
Service	: H_2S Trim
Designation of System, Equipment	: BOP Systems, Blowout Prevention Equipment - Valves in Drill String

**All operating conditions for the product shall be within the limits specified in the combined loading curves reported by the manufacturer. Capacities may be further limited by end connections.*

Lower IBOP P/N 19089358-003

Design Parameter	Value
Minimum Design Temperature	: -4°F
Maximum Working Pressure	: 20,000 psi
Maximum Working Pressure while Drilling (w/ combined loads)	: 10,000 psi
Maximum Tensile Capacity*	: 3,000,000 lbf
- At Maximum Working Pressure while drilling and 105,000 ft-lbf maximum torsional load	
Maximum Continuous Drilling Torque	: 105,000 ft-lbf
API 7-1 Service Class	: 2
Sealing System Temperature Range	: 14˚F to 194˚F (-10˚C to 90˚C)
Service	: H_2S Trim
Designation of System, Equipment	: BOP Systems, Blowout Prevention Equipment - Valves in Drill String

**All operating conditions for the product shall be within the limits specified in the combined loading curves reported by the manufacturer. Capacities may be further limited by end connections.*

Type Approval documentation

Tests carried out
The following reports were reviewed and found to be satisfactory for verification of type testing/design validation testing requirements per the API 7-1 service class and supplemental designation identified in the design limitations:

1. Document No. 18301910-SPC Rev 2 Test Specification for 20ksi internal blow-out preventer (IBOP), P/N: 19089357-003 dated 4/4/2025.
2. Document No. 18301910-SPC Rev 2 Test Specification for 20ksi internal blow-out preventer (IBOP), P/N: 19089358-003 dated 4/4/2025.

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

1. Serial No.
2. As stated in API 7-1
3. According to the manufacturer's specification(s)

Periodical assessment

For retention of the Type Approval, DNV's surveyor shall perform periodical assessment after 2 years (+/- 90 days) and after 3.5 years (+/- 90 days) in accordance with DNV's Class Programme DNV-CP-0338, Section 4.

Other conditions/ comments

- Procedures related to testing, welding, NDT, etc. are to be reviewed/approved by DNV's local surveyor.
- Manufacturing records are to be maintained in accordance with DNV-OS-E101 Ch.3 Sec. 3.
- 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.
- DNV Ref.: A1642261.

Manufactured by:

National Oilwell Varco, L.P. - Rig Technologies Division, Avenida Circulo de la Amistad Numero 128 21210 Mexicali BC Mexico