Certificate no.:
TAS0000500

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Cranes, gen.

with type designation(s)
50mT knuckle boom subsea crane

issued to
National Oilwell Varco Norway AS
KRISTIANSAND S, **Norway**

is found to comply with

DNV standard DNV-ST-0378 – Offshore and platform lifting appliances

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2025-10-01**
This Certificate is valid until **2030-09-30**.
DNV local unit: **West Norway CMC**

for **DNV**

Approval Engineer: **Thomas Henrik Tranesen**

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

Remotely operated 50mT knuckle boom subsea crane, with active heave compensation and active constant tension functionality.

Reference standards

FEM 1.001, Rules for the design of hoisting appliances, 1998

Application/Limitation

Machine type	OC2809KS-(37-50)-(20-16)(15)(50-3000)AHC
Operation:	remote, no operator cabin

Min design temperature	-20°C
Design fatigue life	20 years
Appliance FEM classification	A3/U3/Q2
Zone classification	non-classified area

Max wind speed	25m/s @ operation 44m/s @ stowed (survival & transit)
Hook load SWL*	50mT @ 16m / harbour 50mT @ 15m / internal lift 50mT @ 11m / sea lift 5mT @ 20m / personnel handling
Dynamic amplification factor, max *	1.35 @ subsea lift (subsea operations are considered as engineered lifts)
Max heel / trim angles *	5deg/2deg

** Complete information on crane capacity and dynamics:*

- *Load charts doc.no. EQ-28448-101A-Z-RD-010 / EQ-27902-101A-Z-RD-010*
- *Derating charts doc.no. EQ-28448-101A-Z-RD-003 / EQ-27902-101A-RD-003*

Number of falls	1
Min/Max operation radius	4m/20m
Slewing range	+/-195deg

Main winch wire diameter	ø50mm
Min breaking load	2272kN
Drum capacity	3000m
Max wire tension, dynamic	702kN
Max wire tension, uniform	532kN
Number of layers	16
Number of drives	5

Power supply, main	690 V / 60 Hz / 3ph

Type Approval documentation

Comments

- Forming of materials shall be in accordance with DNV-ST-0378 §3.11.4.
- Slewing bearing is not a scope of this type approval and shall be delivered with DNV Product Certificate.
- Slewing bearing bolts shall be delivered with 3.2 certificate and preloaded in accordance with the manufacturer's procedure (70% of yield).
- Hydraulic cylinders are not a scope of this type approval and shall be delivered with DNV Product Certificate.
- Gears and brakes are not a scope of this type approval and shall be delivered with DNV Product Certificate.
- Components e.g. sheaves, hydraulic cylinders, hook block, gears and brakes – are not scope of this type approval.
- Boom rest or any other seafastening device is not a part of this type approval.

Tests carried out

- Functional testing of the crane shall be carried out in accordance with DNV-ST-0378 Sec.14.1.
- Load testing shall be carried out in accordance with DNV-ST-0378 Sec.14.2.
- Examination of the crane shall be carried out after the load test in accordance with DNV-ST-0378 Sec.14.2.4.

Marking of product

Marking of the crane shall be in accordance with DNV-ST-0378 Sec.14.5.

Periodical assessment

For retention of the Type Approval, a DNV 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 DNV-CP-0338.

Manufactured by:

National Oilwell Varco AS
Dvergsnesbakken 3, 4639 Kristiansand, Norway