Certificate No:
TAS00003DG

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Cranes, gen.

with type designation(s)
20T Offshore deck crane

Issued to
Protea Sp. z o.o.
Gdańsk, **Poland**

is found to comply with
DNV standard DNV-ST-0378 – Offshore and platform lifting appliances, July 2019 (Amended October 2021)

Application :

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

Issued at **Høvik** on **2022-04-04**
This Certificate is valid until **2027-04-03**.
DNV local station: **Katowice CMC**

Approval Engineer: **Khurram Saeed Khaliq**

for **DNV**

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.

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

20T Protea offshore deck crane, single boom. Ref. dwg. No. MC1070-D11-010

Reference standards

The drawings and documents are evaluated according to:

- DNV-ST-0378, Offshore and platform lifting appliances, ed. July 2019, amended Oct. 2021
- EN 13852-1:2013, Cranes – Offshore cranes – Part 1: General-purpose offshore cranes

,and relevant part of:

- DNV Rules for Classification of Ships/High Speed, Light Craft and Naval Surface Craft.
- Pt.4 Ch.8 Electrical Installations.
- Pt.4 Ch.9 Control and Monitoring Systems.

Application/Limitation

Crane type: Offshore crane

Area classification: Safe zone

General information:
Max Safe Working Load (SWL): 20 tonne
Safe Working Load and design dynamic factor is dependent on boom tip position and lifting modes as specified in:

- “Load chart” doc. No. MC1070-M12-002, rev.01
- “Calculation report” doc. No. M1070-K12-001, rev. 04, Sec. [2.2]

Design dynamic factor:

- internal lift: 1.15
- Offshore lift: “Calculation report” doc. No. M1070-K12-001, rev. 04, DNV techdoc no. , Sec. [2.2]

Design temperature: -20°C
Heel/trim: 5°/2°

Crane is not intended for personnel lifting

General comments

1. The various components transferring load (loose gear) such as hook, wire rope, sockets shackles etc. shall be manufactured according to recognized standards or codes and shall be delivered with relevant ILO form certificates.

2. For cranes to be covered by class (Notation CRANE or Crane Vessel) additional load charts and calculation for the dynamic coefficient shall be submitted, ref. DNVGL-ST-0378 Ed. July 2019, Sec.2 [2.1.3.3]

3. Pad eyes/lifting lugs/service cranes used for maintenance and installations are not covered by this approval.

4. The following components are to be separately approved by DNV, and delivered with certificates as below:
   - Winch gears and brakes: Works Product Certificate
   - Hydraulic cylinders: DNV Product certificate
   - Sheaves: DNV Product certificates for welded sheaves, Work Product certificate for unwelded sheaves

5. Fastening to vessel deck structure is not covered by this approval. It is part of the hull and shall be approved separately.

6. Primary and secondary structures to be delivered with material certificate type 3.1, except for slewing ring and slewing ring fasteners, which is to be delivered with material certificate type 3.2. Material certificate for slewing ring is to be signed by DNV representative.

Type Approval documentation

Drawing no.	***Rev.***	***Document title***

MC1070-L16-001	01	Utility Consumption List
MC1070-K12-002	04	FMEA
MC1070-M12-002	01	Load Chart
MC1070-K15-001	02	Support Reactions Report
MC1070-M13-001	02	Data Sheet
MC1070-M12-001	01	Main Crane Technical Specification
MC1070-K12-001	04	Calculation report
MC1070-D12-002	01	Wiring interconnection diagram
MC1070-D12-045-	01	Interface diagram
MC1070-D12-110	02	io - Layout drawing
MC1070-D12-103	01	Switchboards SB3 - Layout drawing
MC1070-D12-120	01	CP - Layout drawing
MC1070-D13-131	02	Slewing Column – hydraulic assembly
MC1070-D13-521	01	Luffing Mechanism – hydraulic assembly
MC1070-D13-101	01	Pedestal – hydraulic assembly
MC1070-D13-301	05	Winch – hydraulic assembly
MC1070-D13-201	01	Boom – hydraulic assembly
MC1070-D13-001	03	hydraulic flow diagram
MC1070-D11-420	01	Sheaves – assembly
MC1068-D11-502	01	Washer M42
MC1068-D11-503	01	Nut M42
MC1070-D11-101	02	Pedestal – mechanical assembly
MC1070-D11-770	01	Inner Platform
MC1070-D11-102	05	Pedestal
MC1070-D11-501	01	Slewing Mechanism Assembly
MC1070-D11-860	01	Earth pin assembly M12
MC1070-D11-161	01	Brackets
MC1070-D11-131	01	Slewing Column – Mechanical assembly
MC1070-D11-132	02	Slewing Column – Construction
MC1070-D11-180	01	Fire Protection System
MC1070-D11-190	01	Slewing encoder unit
MC1070-D11-001	04	General Arrangement
MC1070-D11-160	01	Platforms – Assembly
MC1070-D11-170	01	Column – electrical equipment
MC1070-D11-200	01	Boom – Assembly
MC1070-D11-211	01	Brackets
MC1070-D11-303	01	Drum Support
MC1070-D11-202	01	Boom – Construction
MC1070-D11-302	01	Drum Support
MC1070-D11-300	01	Winch – Assembly
MC1070-D11-301	02	Winch – Mechanical Assembly
MC1070-D11-201	01	Boom – Mechanical Assembly
MC1070-D11-304	01	Drum
MC1070-D11-401	01	Main Block – Assembly
MC1070-D11-400	01	Reeving – assembly
MC1070-D11-345	01	Slack Rope Indicator – Assembly
MC1070-P15-001	01	FAT Procedure
MC1070-D11-100	01	Pedestal – assembly
MC1070-D11-130	01	Slewing Column – assembly
MC1070-D11-010	01	Pedestal Crane 20T
MC1070-R17-004	01	Calculation of Performance Level
MC1070-M13-002	01	Instruction for Operation
MC1070-R99-006	01	Cause and effect diagram

1596966	-	hoisting gearbox
V92-2798-000-COMM	1	slewing bearing
153229	1	luffing cylinder
MC1070-S14-009	01	Slew bearing fasteners
MC1055-D99-004	02	Pedestal Crane Stud
MC1070-D12-020-	07	Termina diagram
MC1070-D12-004-08	08	Single line diagram
MC1070-D99-003	01	Pedestal Crane Painting Drawing
MC1070-L12-002	06	Cable List
MC1070-V12-030	-	Wire rope certificate
MC1070-S14-001	03	Slew Gearbox
MC1070-D12-001-	09	Block diagram
MC1070-K12-003	01	AOPS
MC1070-D12-101-	04	Switchboards SB1 - Layout drawing
MC1070-D12-003-	09	Loop diagram
MC1070-D12-102-	04	Switchboards SB2 - Layout drawing
MC1070-D12-100-05	05	Switchboards SB0 - Layout drawing

Tests carried out

No specific type test is found necessary to require in connection with the Type Approval, but each unit subject to DNV certification shall be tested according to DNV-ST-0378 Ed. July 2019, Sec.14.

Marking of product

The crane shall be marked according to DNV-ST-0378 Ed. July 2019, Sec.14.

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.