Certificate no.:
TAA00003EE

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Remote Control System Steering Gear

with type designation(s)
DSC 200 / MCP 200

issued to
Jastram Engineering Ltd.
North Vancouver, BC, Canada

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

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

Temperature	**D**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**B**

Issued at **Høvik** on **2024-10-29**
This Certificate is valid until **2029-10-28**.
DNV local unit: **Vancouver**

for **DNV**

Approval Engineer: **Uwe Supke**

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

Remote steering control system comprising the following components:

DSC 200 Digital Steering Controller
MCP 200 Mode Control Processor
Other type approved components may be included as part of the system: (see TAA0000158)
Steering Mode Control Panel: CP 375/600.
Analog Full Follow Up Command Devices: LC 100/300/350, EW 100/200/300.
Digital Full Follow Up Command Devices: DH 26/36/58/90/110.
Non-Follow Up Command Device: JO 100.
Rudder Feedback: RFU 2000.

Basic software:
DSC 200 Firmware Rev.: V (DSC 200 28_JUN_24)
SCP 200 Firmware Rev.: O (SCP 200 28_JUN_24)

Approval conditions/Limitations

Product certificate
Each delivery of the type approved system is to be certified according to DNV Pt 4. Ch 9 Sec.1. Project-specific documentation shall be submitted for approval as per the table below and a certification test shall be performed at the manufacturer of the application system before the system is shipped to the yard.

Clause for application software control
All changes in software are to be recorded as long as the system is in use on board. Records of major changes are to be forwarded to DNV for evaluation and approval and shall be approved before implemented on board.

Major changes to the type approved system affecting future deliveries shall be informed to DNV. If the changes are considered to affect functionality for which rule requirements apply, a new functional type test may be required, and the certificate may have to be renewed to identify the new version. Minor changes are covered by this type approval.

This type approval certificate confirms compliance with requirements as specified in the table below.

<table>
<tr><td>This TA certificate covers:</td><td>For each delivery of the type approved system(s), the following documents shall be submitted:</td></tr>
<tr><td>Type approval of hardware components in accordance with:

DNV-RU-SHIP Pt.4 Ch.9 Sec.5</td><td rowspan="2">- Reference to this Type Approval Certificate (TAC) and other used components with respective reference to a valid TAC
– Equipment list (Z090)
– System Block diagram (topology)(I030)
– Power supply arrangement (I050) may be included in document I030.
– Functional description (I020) including Layout of bridge control panels
– List of control and monitored points (I110)
– System circuit diagram (I150)
– Software revision history document (I320), if updated
– Functional failure analysis (Z070) documenting compliance with requirements for redundancy and effect of single failures in the system, if applicable.
– Test program for product certification (Z252).
– Enclosure requirements according to installation location to be documented by TAC, e.g. TAE00003WA, or on a case-by-case basis.</td></tr>
<tr><td>Type approval of software basic capabilities for steering control, monitoring and alarm functions for a single system in accordance with:

DNV-RU-SHIP Pt.4 Ch.10</td></tr>
<tr><td colspan="2">Changes in the system to be delivered compared with the type approved system shall be described and submitted as per applicable rules. For further description of document content, see DNV-CG-0550</td></tr>
</table>

Type Approval documentation

Tests carried out

Applicable tests according to Class Guideline DNV-CG-0339 (08-2021) and DNV Class Program DNV-CP-0201 (11-2021).

Marking of product

The products to be marked with:
- Manufacturer name

- Type designation
- Serial number
- Compass safe distance (if applicable)

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials. The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE