



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. A-12624
This Certificate consists of 3 pages

This is to certify that the
Grounding Avoidance System (GAS)

with type designation
Ocean Explorer MK III

Manufactured by
Japan Radio Co., Ltd.
Tokyo 181-8510, Japan

is found to comply with
Det Norske Veritas' Rules for Classification of Ships
Directional stable ships complying with IMO Res.MSC.137(76)

Place and date
Pusan, 2012-01-01

for DET NORSKE VERITAS AS

Svein Helge Juell
Head of Section



Local Office
DNV Yokohama

This Certificate is valid until
2015-12-31

Cho, Kwang Whan
Surveyor

Notice: 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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



Cert. No.: A-12624
File No.: 844.70
Job Id No.: 262.1-000666-5

Product description

The OceanExplorer MK III consists of the following sub-systems:

- Japan Radio Co., Ltd.; JLR-7700 Mk II DGPS, or
Japan Radio Co., Ltd.; JLR-7800 GPS
- Japan Radio Co., Ltd.; JLN-550 Speed Log,
- Japan Radio Co., Ltd.; JAN-701B ECDIS, or
Japan Radio Co., Ltd.; JAN-901B ECDIS,
- Japan Radio Co., Ltd.; NDC-1186-series Navigation workstation, or
Japan Radio Co., Ltd.; JAN-1186-series Route Planning System
Japan Radio Co., Ltd.; JAN-2000 ECDIS
- Japan Radio Co., Ltd.; JAN-701B-CON Conning display, or
Japan Radio Co., Ltd.; JAN-901B-CON Conning display,
- Japan Radio Co., Ltd.; JMA-9100-series Radar, and/or
Japan Radio Co., Ltd.; JMA-900B-series Chart Radar
- Yokogawa Denshikiki Co., Ltd.; CMZ900 type D Dual Gyro Compass, or
Yokogawa Denshikiki Co., Ltd.; CMZ700 Dual Gyro Compass
- Yokogawa Denshikiki Co., Ltd.; PT500A Heading Control System,

Application/Limitation

- All sub-systems listed above are to be individually type approved in compliance with pertinent IMO performance standards and IEC test standards.
- If a sub-system is replaced by another equivalent type approved system the interface is subject to normal case-by-case design review and commissioning tests onboard.
- Installation drawings of the actual GAS-installation are to be submitted for approval in each case.
- The complete GAS-installation is to be tested on board according to the "On-board test for navigation system (DNV NAUT-AW)", Doc. No. NB060206
- Ocean Explorer MK III is only valid on July 2004 of DNV rule.

Type Approval documentation

- "Ocean Explorer MK II – DNV NAUT-AW Documentation", dated 2 August 2005
- "Acceptance Test Procedures and Results for NAUT-AW", dated 31 August 2005
- "Acceptance Test Procedures and Results for NAUT-AW", dated 28 January 2009
- "On-board test for navigation system (DNV NAUT-AW)", Doc. No. NB060206
- "Test procedure & result adaptive autopilot PT500", Doc.No.D02AA-08-057(2009)



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Tests carried out

Tests according to Acceptance Test Procedures and Results for NAUT-AW dated 31 August 2005 and 2009-01-28, including;

- Failure simulation conducted to evaluate error detection and pertinent fail-to-safe mode
- Functional tests of interface and communication protocols

Marking of product

- Type designation "Ocean explorer MKIII" to be marked on ECDIS

Certificate retention survey

Retention surveys of the OceanExplorer MK III production line are to be performed prior to renewal of this certificate.

The scope of the retention/renewal survey is to verify that the conditions stipulated for the type approval are complied with and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The survey is to take place at Japan Radio Co., Ltd., Tokyo Japan.

END OF CERTIFICATE