DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. S-5487
This Certificate consists of 3 pages

This is to certify that the

Sacrificial Anode for Corrosion Protection

with type designation(s)

ETC III ALUMINIUM ALLOY

Manufactured by

Emirates Techno Casting L.L.C.
AJMAN, United Arab Emirates

is found to comply with
DNV's Recommended Practice B401 (2005)
Det Norske Veritas' Type Approval Programme 1-601.2, 2000, Sacrificial Anode Materials

Application
The mean current capacity of the sacrificial anode material after 12 months free running testing is 2500 Ah/kg. The mean closed circuit potential is - 1096 mV vs. Ag/AgCl seawater. The approval is given for use in sea water at temperatures below 30°C.

Place and date
Høvik, 2008-11-04
for DET NORSKE VERITAS AS

Hanne Anita Hjerpetjønn
Head of Section

Local Office
DNV Abu Dhabi

This Certificate is valid until
2012-12-31

Gisle Hersvik
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.

Product description

ETC III ALUMINIUM ALLOY; Aluminium alloy sacrificial anode material.

Application/Limitation

Approval is given for the sacrificial anode material; not for anode design.

For cathodic protection of steel structures in sea water sediment, sea mud, subsea pipelines, ship's hull, tank internals, steel structures buried in soil, etc.

The mean current capacity of the sacrificial anode material after 12 months free running testing was calculated to be 2500 Ah/kg.

Type Approval documentation

1. Email from Abu Dhabi of 2008-07-08, incl. re. long-term testing of anode material, calibration certificates and test reports (tests witnessed by DNV) and final Survey Report.
2. Email from Abu Dhabi of 2008-02-21, incl. procedures, logs and checklists re. long-term testing of anode material.
3. Email from Abu Dhabi of 2007-09-24, incl. draft Survey Report of 2007-08-22.
4. Various email correspondences between DNV and ETC in the period May 2006 – October 2008.

Tests carried out

Type Testing carried out according to **Type Approval documentation**, incl. Type Test Report from Emirates Techno Casting LLC of 2008-06-20.

Marking of product

Product shall be marked with *manufacturer's name*; **ETC** and *type designation.*

Certificate Retention/Renewal Survey

The scope of the Retention/Renewal Survey is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Survey to be performed after two (2) years (Certificate Retention Survey) and at renewal after four (4) years (Certificate Renewal Survey).

The main elements of the survey are:

- Ensure that **Type Approval documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Approval documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and the DNV Type Approval Certificate.

END OF CERTIFICATE