**"This certificate replaces Certificate Number PIR1407503/1 issued at Piraeus, dated 23.12.2015 which is hereby cancelled."**

Certificate no: **PIR1407503/1/A1**



Project: **Performance Test of POLCOR Sacrificial Alloy Anodes according to Appendix C of DNV RP-B401:2010**

Client: **ENVIRONMENTAL PROTECTION ENGINEERING S.A.**

Office: **Piraeus**

Clients Order Number:

Date: **10 May 2016**

Order Status: **Complete**

Inspection Dates

First: **07 March 2014**

Final: **20 March 2015**

This certificate is issued to **ENVIRONMENTAL PROTECTION ENGINEERING S.A. to certify that the undersigned Surveyors did,at their request, attend their works at Schlstos Industrial Area,between 07th of March 2014 and 20th of March 2015 for the purpose of monitoring the long term performance test of Sacrificial Alloy Anodes according to Appendix C of DNV RP-B401:2010"Cathodic Protection Design" (2010).**

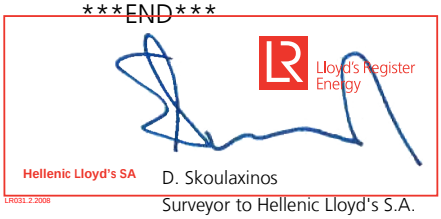
The following tests and examinations were performed:-

1. Verification of samples' with production code C07141, type of anodes AT110DC (stand off), A100 (flash mounted), Rod anodes and review of manufacturer's declared chemical analysis report (Anode's material is PL842). Chemical analysis was carried out by, means of a metal analyser ARL 3460 (emission spectrometer) calibrated according to manufacturer's procedure.
2. Visual and dimensional examination of cylindrical test specimen, which found to be in accordance with subject recommended practice.
3. Witnessing the preparation of testing solution and of testing arrangement.
4. Spot monitoring of testing procedure for verification of testing parameters.
5. Review of measuring devices calibration records.

Conclusions:

1. The test design, execution and reporting are found to be in accordance with the requirement of Appendix C of DNV RP-B401:2010.
2. The average current capacity of the anode material after 12 months testing for each sample is 2617.66 Ah/kg, 2560.42 Ah/kg, 2591.94 Ah/kg, 2459.11 Ah/kg, 2511.48 Ah/kg, respectively; the average electrochemical capacity is 2548 Ah/kg. The closed circuit potential is about -1130 mV vs. Ag/AgCI seawater.
3. The calculation and test results obtained from the tests have been checked and found to be satisfactory.
4. Certificate is given for use in seawater from 7 °C to 20 °C.

***END***




D. Skoulaxinos
Surveyor to Hellenic Lloyd's S.A.

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