TROJAN marinex™

ASK THE TOUGH QUESTIONS AND FIND OUT IF YOUR BWT SUPPLIER IS ON COURSE FOR U.S. COAST GUARD TYPE APPROVAL

1. Was IMO testing done according to USEPA ETV protocol?
    a. If no, when will testing be done according to USEPA ETV protocol?
2. Was IMO testing completed at a USCG certified Independent Laboratory?
    a. If yes, which facility?
3. What is the minimum UV transmittance to which the system has been land-based tested and proven effective, and where can I find the evidence (e.g., Type Approval certificate)?
4. Which salinity ranges was the system tested in?
5. What flow rate was land-based testing conducted at?
6. What flow rate was shipboard testing conducted at?
7. What flow rates does the IMO Type Approval certificate cover and was the IMO Guidance for Scaling Ballast Water Treatment Systems utilized by the administration providing Type Approval?

FIVE REASONS WHY WE ARE ON COURSE FOR U.S. COAST GUARD TYPE APPROVAL

The Trojan Marinex™ BWT product suite obtained IMO Type Approval from Det Norske Veritas (DNV) on behalf of the Norwegian Maritime Directorate in March 2014. In addition, the suite was issued Alternative Management System (AMS) acceptance by the United States Coast Guard (USCG) in August 2014. We are now on course for USCG Type Approval.

We remain committed to being one of the first BWT system suppliers to achieve USCG Type Approval, and continue to take the necessary steps to achieve this goal.

1. CERTIFIED INDEPENDENT LABORATORY

- The USCG requires that Type Approval testing be completed with a certified Independent Laboratory (IL). This ensures that testing is completed in an accurate and unbiased manner, to the highest of standards.

Our testing was conducted under the supervision of DNV – who is certified as an Independent Laboratory by the USCG. Land-based testing was completed at the DHI Maritime Technology Evaluation Facility in Hundested, Denmark and shipboard testing was completed on board the Training Ship Golden Bear (TSGB) – both are part of DNV's network of subcontractors approved by the USCG for testing BWT systems.

2. ETV BALLAST WATER PROTOCOL

- The United States Environmental Protection Agency (USEPA) Environmental Technology Verification (ETV) Ballast Water Protocol is a key testing requirement for systems to obtain U.S. Coast Guard Type Approval. Its testing methods are more rigorous, highly prescriptive and consistent, compared to IMO G8 guidelines.

Our testing was conducted – under the supervision of DNV – in accordance with the ETV Ballast Water Protocol. Provisions within the protocol can consider alternative methods, which are currently under review.

3. FRESH, BRACKISH, MARINE

- Salinity in ports and harbors around the world vary, therefore it is necessary that systems be tested in all salinities, including fresh water. System suppliers that test in only two salinities may obtain USCG Type Approval, however, similar to issued AMS certificates, these systems will only be permitted to operate in water salinities that were tested and approved. If a system has not been tested in fresh water, it will not be permitted to ballast in fresh water.

We tested in all three.

4. POOR WATER QUALITY

- Many existing IMO Type Approved systems have been tested in higher clarity water (high UV transmittance). It is expected that these systems will not be able to treat lower clarity waters than to what they have been tested to under USCG regulations. The UV transmission value will be noted on the Type Approval certificate, significantly limiting the applicability of the system in poorer water qualities.

The Trojan Marinex BWT system is tested and approved to one of the lowest UVT values in the industry, under full flow conditions.

5. HIGH FLOW RATES

- Many existing IMO Type Approved systems have only been tested at relatively low flow rates (e.g., < 250 m^3/h), and empirical models and simulations were used in an effort to show performance at higher flow rates. While many systems have been tested at higher flows in shipboard applications, it is critical that land-based testing be conducted on these systems too. Parameters can be more closely controlled and land-based tests typically have much higher organism counts, which effectively simulates worst-case conditions.

Our land-based testing was conducted up to 1250 m^3/h to verify the efficacy of the system at higher flow rates, and to validate scaling models. To date, this is the highest flow land-based test of a BWT system.

Head Office (Canada)
3020 Gore Road London, Ontario, Canada N5V 4T7
Telephone: (519) 457-3400 Fax: (519) 457-3030

www.trojanmarinex.com

TROJAN marinex™
A TROJAN TECHNOLOGIES BUSINESS