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February 11, 2019

Optimarin AS
Attn: Birgir Nilsen
400 Main Street, Suite 713
Stamford, CT 06901

ALTERNATE MANAGEMENT SYSTEM ACCEPTANCE

The Coast Guard has completed its review of the Alternate Management System (AMS) application submitted by Optimarin AS for the Optimarin Ballast System ballast water treatment system (BWTS). This letter is a revision to the previous Optimarin AMS acceptance letter issued July 11, 2014 and is necessitated by the issuance of a new type approval certificate. This letter grants AMS acceptance in accordance with the requirements of 33 CFR 151.2026 for the Optimarin Ballast System and Optimarin Ballast System EX and approved filter modules, as type approved by DNV-GL under the authority of the Norwegian Maritime Administration and as detailed in type approval certificate No. TAP000006X issued on March 8, 2018.

The following Optimarin models are accepted for use as an AMS in U.S. waters:

Models utilizing the Filter safe (40 μ m) filter:

- BS-025H/V with a maximum TRC of 50 m³/h;
- BS-050H/V with a maximum TRC of 125 m³/h;
- BS-070H/V with a maximum TRC of 180 m³/h;
- BS-100H/V with a maximum TRC of 250 m³/h;
- BS-150H/V with a maximum TRC of 375 m³/h;
- BS-200H/V with a maximum TRC of 500 m³/h;
- BS-300H/V with a maximum TRC of 750 m³/h;
- BS-400H/V with a maximum TRC of 1000 m³/h;
- BS-603H/V with a maximum TRC of 1500m³/h;
- BS-804H/V with a maximum TRC of 2000 m³/h;
- BS-1004H/V with a maximum TRC of 2500 m³/h;
- BS-1204H/V with a maximum TRC of 3000 m³/h;
- BS-1206H/V with a maximum TRC of 3000 m³/h;

Models utilizing the Filtrex (40µm) filter:

- ACB-903-65 with a maximum TRC of 35 m³/h;
- ACB-904-80 with a maximum TRC of 55 m³/h;
- ACB-906-100 with a maximum TRC of 87 m³/h;
- ACB-910-150 with a maximum TRC of 135 m³/h;
- ACB-915-150 with a maximum TRC of 190 m³/h;
- ACB-935-200 with a maximum TRC of 255 m³/h;
- ACB-945-200 with a maximum TRC of 340 m³/h;
- ACB-955-250 with a maximum TRC of 515 m³/h;
- ACB-985-300 with a maximum TRC of 770 m³/h;
- ACB-999-350 with a maximum TRC of 1040 m³/h;
- ACB-9100-400 with a maximum TRC of 1500 m³/h;
- ACB-9120-500 with a maximum TRC of 2100 m³/h;
- ACB-9200-600 with a maximum TRC of 3000 m³/h;

Models utilizing the Boll & Kirch (40µm) filter:

- MK1 6.18 with a maximum TRC of 40 m³/h;
- MK1 6.18 with a maximum TRC of 100 m³/h;
- MK1 6.18.2 with a maximum TRC of 220 m³/h;
- MK1 6.18.2 with a maximum TRC of 400 m³/h;
- MK1 6.18.2 with a maximum TRC of 600 m³/h;
- MK1 6.18.2 with a maximum TRC of 800 m³/h;
- MK1 6.18.2 with a maximum TRC of 1200 m³/h;
- MK1 6.18.2 with a maximum TRC of 1600 m³/h;
- MK1 6.18.2 with a maximum TRC of 2500 m³/h;
- MK1 6.18.2 with a maximum TRC of 3300 m³/h;
- MK1 6.18.2 with a maximum TRC of 4300 m³/h;
- MK1 6.18.2 with a maximum TRC of 5400 m³/h;
- MK1 6.18.3 with a maximum TRC of 370 m³/h;
- MK1 6.18.3 with a maximum TRC of 500 m³/h;
- MK1 6.18.3 with a maximum TRC of 750 m³/h;
- MK1 6.18.3 with a maximum TRC of 1400 m³/h;
- MK1 6.18.3 with a maximum TRC of 2100 m³/h;
- MK1 6.18.3 with a maximum TRC of 2500 m³/h; and
- MK1 6.18.3 with a maximum TRC of 3800 m³/h.

The Optimarin Ballast System BWTs are assigned the following AMS identification number:

AMS-2019-Optimarin Ballast System-001

Coast Guard acceptance of the Optimarin Ballast System (EX and non-EX types) as an AMS does not accord or imply conformance to or compliance with any other Federal, state, or local water discharge effluent limitations that may apply to the vessel on which the AMS operates or the regulatory regimes and locations within which it operates. The owner and operator of the vessel must comply with all applicable laws, regulations, and treaties, including the Clean Water Act and associated provisions of the Vessel General Permit (VGP); the Federal Insecticide, Fungicide, and Rodenticide Act of 1972, as amended (FIFRA); other Coast Guard safety regulations and requirements; and other applicable laws and regulations.

In accordance with 33 CFR 151.2026 (a)(5), the AMS application required the submittal of a type approval application for the BWTS. The type approval information submitted with the AMS application does not have any bearing on the type approval status of the BWTS, nor does Coast Guard acceptance of the Optimarin Ballast System BWTS (both EX and non-EX types) as an AMS indicate that the BWTS meets requirements for Coast Guard type approval.

The following conditions apply for the operation of the Optimarin Ballast System (both EX and non-EX types) BWTS in U.S. waters:

- 1) The AMS manufacturer must comply with all general conditions of certification stipulated in the type approval certificate P-14944 issued by DNV under the authority of the Norwegian Maritime Administration on July 01, 2014 and expiring December 31, 2017. Revocation of type approval by the approving authority will result in revocation of this AMS acceptance. Copies of all reports required under the stated conditions of use must be submitted to the Environmental Standards Division (OES-3) at the following address or email:

COMMANDANT (CG-OES-3)
United States Coast Guard Stop 7509
2703 Martin Luther King Jr. Ave SE
Washington DC 20593-7509
Tel: 202-372-1402
e-mail: environmental_standards@uscg.mil

- 2) Because this BWTS has not been adequately tested in freshwater, its use as an AMS is limited to the treatment of marine and brackish water with a practical salinity unit (PSU) concentration greater than 1.
- 3) Installation and repairs of the AMS must be performed in accordance with the manufacturer's instructions and approved by the flag administration or its representative.
- 4) Operation and maintenance must be conducted in accordance with all specifications and limiting conditions stipulated on the certificate of type approval and with the manufacturer's instructions, including any limitations posed by environment (for

example, water quality, temperature, salinity, or other parameters) or vessel operations (for example, voyage duration, pumping rates, or other constraints). The following specific conditions apply:

- a. **Flow rates:** The Optimarin Ballast System (both EX and non-EX types) has a ballast water flow rate maximum capacity of 167 cubic meters / hour for each UV chamber installed on the vessel. Treatment rated capacities (TRC) greater than 167 cubic meters / hour are achieved by connecting additional UV chambers in parallel during installation of this BWTS on a vessel, as described in the type approval certificate.
- b. **UV intensity:** This system is designed to operate at UV intensities of 800 Watts / square meter and above. Operation of this AMS at UV intensities below 100 Watts / square meter, as measured at the UV sensor in the UV reaction chamber, will trigger

visual messages and alarms. UV intensities below the 100 Watts / square meter level are not capable of treating ballast water in accordance with the biological efficacy performance standards referenced in the type approval certificate.

- c. **Differential pressure across the filter:** The pressure differential across the filter should not exceed 0.5 bar. The system is set to back flush automatically at 0.38 bar pressure differential across the filter. An alarm is sounded by the control system when high differential pressure across the filter great than 0.5 bar is detected.

A historical record documenting that the system has been operated within these criteria, including a record of any alarm conditions, shall be made available for review onboard the vessel.

- 5) If installed on a U.S. flag vessel, it must be shown that the system and installation comply with or provide an equivalent level of safety to the requirements of 46 CFR Subchapter F (Marine Engineering) and Subchapter J (Electrical Engineering). All electrical equipment located within hazardous areas must be explosion proof or intrinsically safe as certified by an independent laboratory recognized by USCG per 46 CFR 111.105-7.
- 6) Use of the AMS is specified in the ship's ballast water management plan (BW plan), required by 33 CFR 151.2050(g). The BW plan must identify the following: (1) the ballast water management practices to be used in the event the AMS cannot be used, and (2) the personnel responsible for the operation, maintenance, and repair of the BWTS. An up-to-date record of the operation, maintenance, and repair of the BWTS must be maintained onboard the ship.
- 7) Any change in design, materials, manufacturing, or intended operational conditions of this BWTS without prior notification to, and acceptance by, the U. S. Coast Guard will automatically invalidate this AMS acceptance. Prior to any such change, the manufacturer of an AMS must notify the Commanding Officer, U. S. Coast Guard Marine Safety Center (MSC), at the following address or e-mail:

Commanding Officer (MSC) Attn:
Marine Safety Center
U.S. Coast Guard Headquarters
2703 Martin Luther King Jr. Ave. SE Washington,
DC 20593-7509
e-mail: msc@uscg.mil

- 8) The notification must include (1) a description of the change, the reason it is required, and its intended advantages; (2) an explanation of any effect of the change on installation, operation, maintenance, or repair requirements; and (3) an indication of whether or not the original configuration of the BWTS will be discontinued.
- 9) If the installed AMS does not operate properly when treating ballast water intended for discharge in U.S. waters, the person directing the movement of the vessel must ensure that the problem is reported to the nearest Coast Guard Captain of the Port (COTP) or District Commander as soon as practicable. The Coast Guard shall be notified of any treatment system or component failures, irreparable damage to components of the AMS, frequent process upsets or out-of-bounds operating conditions, or other situations or process-related conditions that may reduce treatment effectiveness. The vessel may continue to the next U.S. port of call, subject to the directions of the COTP or District Commander, as provided by 33 CFR 160.
- 10) All transport and handling of chemicals required for proper operation of the AMS must be conducted in accordance with 46 CFR 147 (Hazardous Ships' Stores), 49 CFR 171-180 (Hazardous Materials Regulations), and 46 CFR 98.30 (portable tanks), as appropriate.
- 11) Use of the AMS must be reported in the ship's ballast water management reports submitted to the National Ballast Information Clearinghouse, as required by 33 CFR 151.2060, as follows:
 - a. Report the AMS identification number, located toward the beginning of this letter and in bolded text, in "Vessel Information" section in the space labeled "Onboard BW Management System" and;
 - b. In the "Ballast Water History" section, for each tank for which the AMS was used, select the "Event" as "Onboard Treatment" for one of the reported tank events (e.g., Discharge, Onboard treatment, Source).

The Coast Guard may suspend, withdraw or terminate the acceptance of this BWTS as an AMS in accordance with 46 CFR 2.75-40, 2.75-50(a) and 2.75-50(b), respectively. A copy of this letter shall be provided to each vessel with this installed AMS and this copy shall be available for review when the vessel is operating in U.S. waters.

I thank you for your dedicated efforts to seek out AMS acceptance, and we look forward to working with you throughout the type approval process. If you have any questions concerning this letter, you may contact Ms. Debbie Duckworth of my staff at Debbie.Duckworth@uscg.mil.

Sincerely,

A handwritten signature in blue ink, appearing to read 'S.T. BRADY', with a large, stylized flourish at the end.

S.T. BRADY
Captain, U.S. Coast Guard
Operating and Environmental Standards