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January 7, 2014

Auramarine, Ltd.
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ALTERNATE MANAGEMENT SYSTEM ACCEPTANCE

The Coast Guard has completed its review of the Alternate Management System (AMS) application submitted by Auramarine, Ltd., for the CrystalBallast® ballast water treatment system (BWTS). This letter grants AMS acceptance in accordance with the requirements of 33 CFR 151.2026 for the following CrystalBallast® models, as type approved by Det Norske Veritas (DNV) on behalf of the Norwegian Maritime Administration, and as detailed in two type approval certificates issued in 2013: DNV P-14489 and DNV P-14435.

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

- CrystalBallast® model CB75 with a treatment rated capacity (TRC) of 75 cubic meters/hour (m^3/hr), as type approved under certificate DNV P-14489, issued July 2, 2013, and expiring December 31, 2017; and
- CrystalBallast® model CB250 with a TRC of 250 m^3/hr , as type approved under certificate DNV P-14435, issued May 7, 2013, and expiring December 31, 2016.

The CrystalBallast® BWTS is assigned the following AMS identification number:

AMS-2014-Auramarine CrystalBallast-001

Coast Guard acceptance of the CrystalBallast® BWTS 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.

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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 CrystalBallast® system as an AMS indicate that the BWTS meets requirements for Coast Guard type approval.

The following conditions apply for the operation of the CrystalBallast® BWTS in U.S. waters:

1. The AMS manufacturer must comply with all general conditions of certification stipulated in the type approval certificates issued by DNV on behalf of the Norwegian Maritime Administration, as referenced above. 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 Office of Environmental Standards (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. 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.
3. 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 maximum flow rate through the BWTS shall not exceed the TRC specified on the type approval certificate for the model. For the CB75 model, the operational range of one UV chamber is 5 to 75 m³/hr. For the CB250 model, the operational range of one UV chamber is 20 to 250 m³/hr. The minimum permissible flow rate must be maintained to avoid overheating the UV lamps. A historical record of flow rate is available via readouts from the PLC monitor panel.
 - b. **BWTS configuration:** A combination of UV chambers is permissible if the UV chambers are mounted in parallel, either horizontally or vertically, and the specific combination of units has been approved by DNV. Documentation of DNV type approval acceptance of the configuration must be available for review.
 - c. **Differential pressure across the filter:** The differential pressure across the filter and associated system components should not exceed 0.8 bar or 0.08 megapascal (MPa).

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The filter is set to automatically back flush when differential pressure across the filter exceeds 0.5 bar (0.05 MPa).

- d. **UV intensity for the CrystalBallast® BWTS:** This BWTS is designed to automatically adjust ballast water flow through the UV chambers to maintain the treatment efficacy standards specified in the type approval certificates. If the turbidity of the ballast water reduces UV light transmission, the flow rate is decreased to maintain adequate UV intensity. The following specific operating conditions apply to the CrystalBallast® CB75 and CB250 models:
 - i. **UV intensity for the CrystalBallast® CB75 model:** The operational range of one UV chamber is 5 to 75 m³/hr. The CB75 model must operate between a minimum UV intensity of 10.30 W/m² and a maximum UV intensity of 20 W/m². If the UV intensity measured at the remote UV sensor in the UV chamber decreases to 10.30 W/m², audio and visual alarms are activated at all control stations.
 - ii. **UV intensity for the CrystalBallast® CB250 model:** The CB250 model must operate between a minimum UV intensity of 10.39 Watts/square meter (W/m²) and a maximum UV intensity of 150 W/m², as measured by the remote UV intensity sensor in the UV chamber. If the UV intensity measured at the remote UV sensor of the CB250 model decreases to 10.39 W/m², audio and visual alarms are activated at all control stations.

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.

- 4. Because the CrystalBallast® 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.
- 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 33CFR 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 Stop 7410
4200 Wilson Blvd, Suite 400
Arlington VA 20598-7410
e-mail: msc@uscg.mil

The notification must include the following: (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.

8. 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.
9. 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.

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. In Section 4, report the number of tanks treated by the AMS in the space labeled "Underwent Alternative Management,"
- b. In Section 4, write the AMS identification number (AMS-2014-Auramarine CrystalBallast-001) in the space labeled "Please specify alternative method(s) used, if any," and;
- c. In Section 5, in the middle section titled "BW MANAGEMENT PRACTICES" identify the management method as "ALT" under the heading "Method (ER/FT/ALT)" for each tank for which the AMS was used.

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 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. Regina Bergner of my staff at (202)372-1431 or Regina.R.Bergner@uscg.mil.

Sincerely,



R. E. BAILEY

Captain, U.S. Coast Guard
Office of Operating and Environmental Standards
By direction