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STX Heavy Industries Company, 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 STX Heavy Industries Company, Ltd. for the Smart Ballast® ballast water treatment system (BWTS). This letter grants AMS acceptance in accordance with the requirements of 33 CFR 151.2026 to the Smart Ballast® BWTS models listed below, as type approved by the Ministry of Oceans and Fisheries of the Republic of Korea under type approval certificates 2013-19, 2013-20, 2013-21, and 2013-22, issued September 30, 2013.

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

- SB-EC300 with a treatment rated capacity (TRC) of 300 cubic meters per hour (m^3/hr), as detailed in type approval certificate 2013-19.
- SB-EC600 with a TRC of 600 m^3/hr , as detailed in type approval certificate 2013-20.
- SB-EC800 with a TRC of 800 m^3/hr , as detailed in type approval certificate 2013-21.
- SB-EC1000 with a TRC of 1,000 m^3/hr , as detailed in type approval certificate 2013-22.

The Smart Ballast® BWTSs are assigned the following AMS identification number:

AMS-2014-STX Smart Ballast-001

Coast Guard acceptance of the Smart Ballast® 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.

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

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

1. The AMS manufacturer must comply with all general conditions of certification stipulated in the previously listed type approval certificates issued by the Korean Ministry of Oceans and Fisheries. 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. Because this BWTS has not been tested in nor designed for use in waters with low salinities, its use as an AMS is limited to marine and brackish waters with salinity concentrations greater than or equal to (\geq) 7 practical salinity units (PSU), as specified in the Smart Ballast® BWTS instruction manual.
4. Operation and maintenance of this AMS must be conducted in accordance with all specifications and limiting conditions stipulated on the certificates 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 flow rate of ballast water through the system should not exceed the TRC for the installed model. According to the Smart Ballast® instruction manual, the TRC of a Smart Ballast® system may be doubled by installing two electrolyzer rectifier units (ERU) for a specific model in parallel.

- b. **Design dose of oxidants:** The Smart Ballast® BWTS produces oxidant (sodium hypochlorite solution) through seawater electrolysis. The dosage range is 8.8 to 11.0 milligrams per liter (mg/L) or parts per million (ppm) total residual oxidant (TRO). A TRO probe monitors the oxidant dosage level in the treated ballast water flowing to the ballast tanks; if needed, the TRO concentration is automatically adjusted via control unit signals to the rectifier module. When the ballasting TRO probe indicates that TRO concentrations in the treated ballast water are less than 8.8 ppm or more than 11.0 ppm, audible and visual alarms will occur at both control panels.
- c. **Maximum Allowable Discharge Concentration (MADC):** Prior to the discharge of treated ballast water, TRO must be measured to ensure compliance with all applicable federal, state, and local water quality limits for all discharged chemicals, including disinfectant by-products (DBP). To maintain discharge TRO concentrations less than the MADC, two de-ballasting probes measure TRO and adjust the concentrations by sending signals to the sodium thiosulfate neutralizer unit (the Counteragent Injection Unit). If the de-ballasting TRO probes indicate that the TRO concentration in the discharged water exceeds 0.20 ppm (0.20 mg/L), audible and visual alarms will occur at both control panels
- d. **Holding time:** To achieve biological efficacy results comparable to those reported in the type approval tests, ballast water treated by this AMS must be held for a minimum of 1 day (24 hours) prior to discharge from the vessel's ballast tanks.
- e. **Ballast water temperature:** As stipulated in the Smart Ballast® operating manual, the temperature of the intake ballast water must be greater than or equal to (\geq) 0 °C in order for the BWTS to operate as designed.
- f. **Pressure drop across the strainer:** This BWTS is designed to operate with a pressure drop less than or equal to (\leq) 0.6 bar across the 3-millimeter (mm) mesh diameter filtering strainer. The system is designed to automatically backflush if the pressure drop across the strainer exceeds 0.6 bar.

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 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.

- 10 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 33CFR 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-STX Smart Ballast-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