



5760

November 16, 2015

DeNora Water Technologies, LLC
Attn: Mr. Rudy Matousek
Manager of Technology
1100 Industrial Boulevard
Sugar Land, Texas 77478

ALTERNATE MANAGEMENT SYSTEM ACCEPTANCE - REVISION 1

The Coast Guard has completed its review of the Alternate Management System (AMS) application submitted for the BalPure ballast water treatment system (BWTS) by Severn Trent De Nora, LLC (STDN), now operating as DeNora Water Technologies, LLC. This letter amends the acceptance letter dated April 15, 2013, granting AMS acceptance in accordance with the requirements of 33 CFR 151.2026. This letter covers the following BalPure BWTS models and associated filter units, as type approved by the agency Bundesamt für Seeschifffahrt und Hydrographie (BSH) of the Federal Republic of Germany and as detailed in the BSH type approval (TA) certificate No. 0800S41-4443/000/3 issued December 19, 2014, and expiring December 19, 2017:

- BalPure production models BP-6, BP-8, BP-12, BP-24, BP-32, BP-36, BP-48, BP-60, and BP-75, and operating model options, as specified in the BSH TA certificate.
- Associated Filtersafe, Hydac, and MossHydro automatic back-flush filter units, as specified in the BSH TA certificate.

The BalPure BWTSs retain their original AMS identification number, as follows:

AMS-2013-STDN-Balpure-001

Coast Guard acceptance of the STDN BalPure 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 STDN BalPure BWTS as an AMS indicate that the BWTS meets requirements for Coast Guard type approval.

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

1. The AMS manufacturer must comply with all general conditions of certification stipulated in the type approval certificate issued by BSH under the authority of the government of the Federal Republic of Germany, 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 Environmental Standards Division (OES-3) at the following address or email:

Environmental Standards Division (CG-OES-3)
 U.S. Coast Guard Headquarters
 U.S. Coast Guard Mail Stop 7509
 2703 Martin Luther King Jr. Ave. SE
 Washington, DC 20593-7509
 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 the 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 through the ballast water treatment system should not exceed the treatment rated capacity (TRC) for the installed model.
 - b. **Ballast Water Temperature:** The BSH type approval certificate specifies a water temperature operating range of 0 to 50° Centigrade. The manufacturer's operations manual specifies that the temperature of water entering the electrolyzer should be $\geq 15^\circ$ C. When ballasting in cold waters, the vessel's crew shall employ the system's steam heater skid (optional) or similar heat exchange process to raise the temperature of the feed water to the BWTS electrolyzer unit to the required 15° C.
 - c. **Ballast Water Salinity:** The BSH type approval certificate allows for operation in salinities ranging from 0 to 36 practical salinity units (PSU). The manufacturer's

operations manual states the system is to be operated to treat ballast water only when the feed water to the electrolyzer unit has a salinity value of ≥ 10 PSU. When ballasting in freshwater or very low salinity water bodies, the TA certificate requires that the aft peak ballast tank be filled with seawater prior to such ballasting. During ballasting operations where the intake ballast water salinity is < 10 PSU, as measured by the system's in-line salinity meter, the system must use the high salinity feed water for the electrolyzer unit provided by the seawater stored in the aft peak ballast tank. The system also has the ability to mix water drawn from the sea chest in the engine room with seawater drawn from the aft peak ballast tank to provide larger quantities of electrolyzer feed water with a minimum salinity of 18 PSU. The system is equipped with an alarm to indicate if the salinity of the feed water to the electrolyzer is too low. An alarm on the control panel alerts the operator to switch to a higher salinity electrolyzer feed water source or take other steps to ensure the electrolyzers produce the required design dose of sodium hypochlorite oxidant.

- d. **Active substance dose:** The BalPure system uses sodium hypochlorite (an oxidant) as a disinfecting active substance. The hypochlorite solution is produced in situ by an electrolyzer unit within the BWTS; the electrolyzer uses a side stream of intake ballast water or seawater from other shipboard sources to produce the active substance oxidant. The active substance dose is monitored by the system's programmable logic controller (PLC), based on input from sensors that indicate the amount of total residual oxidant (TRO) in treated ballast water. The following guidelines apply to ballasting operations:
- i. According to the BSH TA certificate, the maximum active substance treatment dose for any BalPure model is 15 milligrams per liter (mg/L) or 15 parts per million (ppm) TRO measured as chlorine. The PLC employs various algorithms to compute the appropriate target or design dose for different ballasting operations based on ballast water flow rate, ballast water salinity, and other pertinent data.
 - ii. The Balpure operations manual states that the minimum active substance treatment dose should not be less than 5 mg/L or 5 ppm.
 - iii. The operations manual recommends that the initial active substance oxidant dosage be confirmed via sampling and Hach kit colorimetric analysis to determine the TRO concentration in the ballast water immediately after ballast uptake. The operations manual recommends that this colorimetric analysis be used to determine the active substance TRO concentration in the treated ballast water in the tanks 24 hours prior to ballast discharge. If the TRO concentration in the tanks is less than 0.3 mg/L (0.3 ppm), the operator should follow one of three available procedures outlined in the operations manual to increase this TRO value to 1 mg/L (1 ppm).

- e. **Differential pressure across the filter:** This BWTS is type approved for use with three automatic back-flushing, 40-micron (μ) mesh filters manufactured by Filtersafe, Hydac, and MossHydro. The filter models and sizes to be used with each Balpure BWTS model are listed in a table in the BSH type approval certificate. The pressure differential across the filter should not exceed 0.5 bar. The system is set to back flush automatically at 0.5 bar pressure differential.
- f. **Treatment holding time:** According to the BalPure operations manual, the minimum holding period for ballast water treated with this BWTS is 24 hours.
- g. **System skid configurations:** As specified in the BSH type approval certificate, the Balpure BWTS may be installed in the two-skid “unitized” (U) configuration, the three-skid “hybrid” (H) configuration, or the six-skid “distributed” (D) configuration.
- h. **Maximum allowable discharge concentration (MADC):** Prior to the discharge of treated ballast water, the TRO concentration must be measured to ensure compliance with all applicable federal, state, and local water quality effluent limits for all discharged chemicals, including disinfectant by-products (DBP). A sensor within this BWTS provides data to monitor the neutralization process and the system automatically controls the neutralizer module to achieve a TRO level below the MADC, which is specified as 0.1 ppm in the operations manual. Acceptable neutralizing chemicals are sodium bisulfate, sodium sulfite, sodium thiosulfate, and sodium metabisulfite. The system can also be operated with excess neutralizing chemicals so that the TRO level achieved for discharged ballast water is 0.0 ppm.

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. 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.
- 5. Use of the AMS must be specified in the ship’s ballast water management plan (BW plan), required by 33 CFR 151.2050(g). The BW plan must identify: (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.

6. 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 Mail Stop 7410
4200 Wilson Blvd., Suite 400
Arlington, VA 20598-7410
e-mail: msc@uscg.mil

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.

7. 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.
8. 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.
9. 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-2013-STDN-BalPure-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.

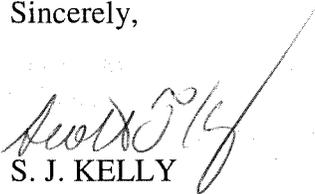
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The Coast Guard may suspend, withdraw or terminate the acceptance of this BWTS as an AMS in accordance with 46 CFR 2.75-40, 2.75-50(a) and 2.75-50(b), respectively.

A copy of this letter shall be provided to each vessel with this AMS installed 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 Regina.R.Bergner@uscg.mil.

Sincerely,



S. J. KELLY

Captain, U.S. Coast Guard

Office of Operating and Environmental Standards



5760
April 15, 2016

DeNora Water Technologies, LLC
Attn: Mr. Rudy Matousek
Manager of Technology
1100 Industrial Boulevard
Sugar Land, Texas 77478

Dear Mr, Matousek,

This letter is intended to clarify the language in the Balpure AMS acceptance letter (Rev1), dated November 16, 2015. You expressed concern that the terms of the AMS letter required the use of an automated measuring system during the neutralization step, and you asked that the letter be revised to allow for manual measurements. The AMS acceptance letter will not require any further revision because the language in Section H does not preclude manual measurements.

The language in Section H of the AMS acceptance letter is quoted below:

"h. Maximum allowable discharge concentration (MADC): Prior to the discharge of treated ballast water, the TRO concentration must be measured to ensure compliance with all applicable federal, state, and local water quality effluent limits for all discharged chemicals, including disinfectant by-products (DBP). A sensor within this BWTS provides data to monitor the neutralization process and the system automatically controls the neutralizer module to achieve a TRO level below the MADC, which is specified as 0.1 ppm in the operations manual. Acceptable neutralizing chemicals are sodium bisulfate, sodium sulfite, sodium thiosulfate, and sodium metabisulfite. The system can also be operated with excess neutralizing chemicals so that the TRO level achieved for discharged ballast water is 0.0 ppm."

The Coast Guard does not require automatic measurements or control as a condition of the AMS acceptance for the Balpure system. Manual measurements are acceptable. Measurement methods and any other procedures used during the on-board management of ballast water should be in accordance with (1) the requirements and specifications in the manufacturer's operating manual and (2) the ship-specific ballast water management plan.

Subj: AMS ACCEPTANCE LETTER – STDN BALPURE (REVISION 1)

5760
April 15, 2016

If you have any questions concerning this letter, you may contact Ms. Regina Bergner of my staff at Regina.R.Bergner@uscg.mil.

Sincerely,

S. J. KELLY
Captain, U.S. Coast Guard
Office of Operating and Environmental Standards