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September 15, 2014

Mitsui Engineering & Shipbuilding Co., Ltd.  
Ship & Ocean Project Headquarters  
Attn: Takuji Cho  
6-4, Tsukiji 5-chome, Chou-ku  
Tokyo 104-8439, Japan

#### ALTERNATE MANAGEMENT SYSTEM ACCEPTANCE

The Coast Guard has completed its review of the Alternate Management System (AMS) application submitted by Mitsui Engineering & Shipbuilding (MES) Company, Ltd. for the FineBallast MF ballast water treatment system (BWTS). This letter grants AMS acceptance in accordance with the requirements of 33 CFR 151.2026 for twelve MES FineBallast MF models, as type approved by the Ministry of Land, Infrastructure, Transport, and Tourism under the authority of the government of Japan and as detailed in the Ministry's type approval (TA) certificate No. 9 issued on November 05, 2013.

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

- Model MF-05 with a treatment rated capacity (TRC) of 50 cubic meters/hour ( $m^3/h$ );
- Model MF-10 with a TRC of 100  $m^3/h$ ;
- Model MF-15 with a TRC of 150  $m^3/h$ ;
- Model MF-20 with a TRC of 200  $m^3/h$ ;
- Model MF-25 with a TRC of 250  $m^3/h$ ;
- Model MF-30 with a TRC of 300  $m^3/h$ ;
- Model MF-40 with a TRC of 400  $m^3/h$ ;
- Model MF-50 with a TRC of 500  $m^3/h$ ;
- Model MF-60 with a TRC of 600  $m^3/h$ ;
- Model MF-70 with a TRC of 700  $m^3/h$ ;
- Model MF-80 with a TRC of 800  $m^3/h$ ;
- Model MF-90 with a TRC of 900  $m^3/h$ .

The MES FineBallast MF BWTS is assigned the following AMS identification number:

AMS-2014-MES FineBallast MF-001

Coast Guard acceptance of the MES FineBallast MF BWTS as an AMS does not accord or imply conformance to or compliance with any other Federal, state, or local water discharge effluent

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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 MES FineBallast MF BWTS as an AMS indicate that the BWTS meets requirements for Coast Guard type approval.

The following conditions apply for the operation of the MES FineBallast MF AMS in U.S. waters:

1. The AMS manufacturer must comply with all the general conditions of certification stipulated in the TA certificate issued by the Ministry of Land, Infrastructure, Transport, and Tourism under the authority of the government of Japan, 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 TA certificate 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 of ballast water through the system should not exceed the treatment rated capacity (TRC) for the installed MES FineBallast MF model, as specified on the type approval certificate. A historical record of flow rate is available via readouts from the control panel.

- b. **Differential pressure across the filter:** A pre-filter unit with approximately 100 um diameter mesh is employed by this BWTS to screen out marine debris and larger organisms. A differential pressure of 0.06 MPA (0.6 bar) across the filter triggers an automatic back flush filter cleaning cycle. An alarm will alert at the control panel if high differential pressure across the filter in excess of 0.08 MPA (0.8 bar) is detected. If this high differential pressure condition persists and the alarm does not cancel, then the operator shall manually shut down the BWTS. A historical record of filter pressure differentials can be obtained from readouts from the control panel.
- c. **Micro-Filter (MF) membrane considerations:** This BWTS does not use UV light or chemical disinfectants as active substances to remove living organisms. Instead, it achieves the removal of organisms from ballast water by means of micro-filter (MF) membranes. The MF membrane pore size is 0.1 um. The MF membranes are arranged as cylinders encased within cassettes with varying numbers of cassettes employed within the membrane module based on the TRC of the installed MES FineBallast MF model. During ballasting, the MF membranes are cleaned by water passing (flashing) procedures performed using ballast water. The organic matter residue resulting from this membrane cleaning process is returned to the sea at the location from which the ballast water was drawn. An abnormal flow rate alarm will activate should membrane clogging cause the ballast water flow within the MF membrane module to decrease below 75% of the TRC of the installed MES FineBallast MF model. When this alarm activates and persists for a pre-set time period, the operator shall manually shut down the BWTS. The ballast water flow rate can be obtained via data readouts from the control panel.
- d. **Maximum allowable discharge concentration (MADC):** As previously stated, this BWTS does not employ chemicals as active substances to remove organisms in the ballast water during the ballast treatment phase. However, this BWTS does employ a Clean-In-Place (CIP) chemical washing system to maintain the MF membrane's filtering performance. The CIP system performs a chemical washing of the MF membrane module using hydrogen peroxide solution within a closed system that isolates the membrane module. The CIP process occurs after the uptake ballast water has been micro-filtered. This chemical washing step is followed by a detoxification process, which adds manganese dioxide to the cleaning solution to neutralize residual hydrogen peroxide and other oxidants. A total residual oxidant (TRO) sensor within the BWTS ensures TRO levels in the cleaning solution are equal to or below 1.0 ppm (measured as chlorine) before the detoxification process is terminated. The "detoxified" cleaning solution is released to the ballast tanks at the commencement of the next ballasting operation - a process that ensures further dilution of the TRO through mixing with ballast water entering the tanks. Prior to the discharge of treated ballast water from this BWTS, 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 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 MES FineBallast MF 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.
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 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-MES FineBallast MF-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 Mr. John Meehan of my staff at [John.A.Meehan@uscg.mil](mailto:John.A.Meehan@uscg.mil).

Sincerely,



R. E. BAILEY

Captain, U.S. Coast Guard

Office of Operating and Environmental Standards

By direction