



U. S. Department of Homeland Security
United States Coast Guard
Certificate of Approval

Coast Guard Approval Number: 162.050/9128/0

Expires: 27 July 2021

OIL POLLUTION PREVENTION EQUIPMENT

The following device has been tested in accordance with IMO resolution MEPC.107(49)

RECOVERED ENERGY INCORPORATED
11455 N. Rio Vista Rd.
Pocatello ID 83202

MiniBOSS and MiniBOSS-5P; 15 ppm Separator and 5 ppm Separator

This is to certify that the equipment listed has been examined and tested in accordance with the requirements of the specifications contained in annex 13 to the guidelines and specifications contained in IMO resolution MEPC.107(49). Equipment manufactured by Recovered Energy, Inc. to drawing nos. MBGEN001RM1.2 and MBB1160.

Maximum throughput of system: .23 and .35 cu. m/hr respectively.

A 1 gpm (.25M3/hr) integral feed pump is fitted with this equipment.

A copy of this certificate should be carried aboard a vessel fitted with this equipment at all times.

IMO Certificates of Type Approval do not expire and are valid for equipment manufactured at any time during the period of validity of this certificate. Test data and results attached in the appendix.

Limiting conditions imposed: Do not exceed rated throughput.

This certificate documents compliance with 46 CFR 162.050.

*** End ***

THIS IS TO CERTIFY THAT the above named manufacturer has submitted to the undersigned satisfactory evidence that the item specified herein complies with the applicable laws and regulations as outlined on the reverse side of this Certificate, and approval is hereby given. This approval shall be in effect until the expiration date hereon unless sooner canceled or suspended by proper authority.

GIVEN UNDER MY HAND THIS 27th DAY OF
JULY 2016, AT WASHINGTON D.C.



S. T. BRADY
Chief Engineering Division
BY DIRECTION OF THE COMMANDANT

TERMS: The approval of the item described on the face of the Certificate has been based upon the submittal of satisfactory evidence that the item complies with the applicable provisions of the navigation and shipping laws and the applicable regulations in Title 33 and/or Title 46 of the Code of Federal Regulations. The approval is subject to any conditions noted on this Certificate and in the applicable laws and regulations governing the use of the item on vessels subject to Coast Guard inspection or on other vessels and boats.

Consideration will be given to an extension of this approval provided application is made 3 months prior to the expiration date of this Certificate.

The approval holder is responsible for making sure that the required inspections or tests of materials or devices covered by this approval are carried out during production as prescribed in the applicable regulations.

The approval of the item covered by this certificate is valid only so long as the item is manufactured in conformance with the details of the approved drawings, specifications, or other data referred to. No modification in the approved design, construction, or materials is to be adopted until the modification has been presented for consideration by the Commandant and confirmation received that the proposed alteration is acceptable.

NOTICE: Where a manufacturer of safety-at-sea equipment is offering for sale to the maritime industry, directly or indirectly, equipment represented to be approved, which fails to conform with either the design details or material specifications, or both, as approved by the Coast Guard, immediate action may be taken to invoke the various penalties and sanctions provided by law including prosecution under 46 U.S.C. 3318, which provides:

"A person that knowingly manufactures, sells, offers for sale, or possesses with intent to sell, any equipment subject to this part (*Part B. of Subtitle II of Title 46 U.S.C.*) and the equipment is so defective as to be insufficient to accomplish the purpose for which it is intended, shall be fined not more than \$10,000, imprisoned for not more than 5 years or both."

APPENDIX

**United States Coast Guard Certificate of Approval Number: 162.050/9128/0
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**TEST DATA AND RESULTS OF TESTS CONDUCTED ON A 15 PPM BILGE
SEPARATOR IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS CONTAINED
IN IMO RESOLUTION MEPC.107(49)**

15 ppm Bilge Separator submitted by:

Recovered Energy Incorporated

Test location:

Testing Engineers International, Inc.
Testing Services-Plumbing Laboratory
3455 South 500 West
Salt Lake City, UT 84115-4234

Method of sample analysis:

ISO 9377-2-2000(E) Water Quality Determination of Hydrocarbon Oil Index
Part 2: Method Using Solvent Extraction and Gas Chromatography

Samples analyzed by:

Director, Tei-Testing Services-Analytical Laboratory

Environmental testing of the electrical and electronic sections of the 15 ppm Bilge Separator has been carried out in accordance with the guidelines and specifications contained in IMO resolution MEPC.107(49). The equipment functioned satisfactorily on completion of each test specified on the environmental test protocol.

Test fluid "A": Marine Residual Fuel Oil, in accordance with ISO 8217, Type RMG 35

Density	980 kg/m ³ at 15°C
Viscosity	38 Centistokes at 100°C
Flashpoint	119°C
Ash content	0.02 %
Water content at start of test	0.10 %

Test fluid "B": Marine Distillate Fuel Oil, in accordance with ISO 8217, Type DMA

Density	857.5 kg/m ³ at 15°C
Viscosity	3.03 Centistokes at 40°C
Flashpoint	73°C
Ash content	<0.01 %
Water content at start of test	<0.01 %

Test fluid "C": A mixture of an oil-in-fresh water emulsion in accordance with MEPC.107(49) paragraph 1.2.4.3

Surfactant: Sodium salt of dodecylbenzene sulfonic acid in dry form.

Iron oxides: [Fe₃O₄] with particle size distribution of which 90% is less than 10 microns, the remainder having a maximum particle size of 100 microns.

Test water

Density	1.014 kg/m ³ at 20°C
Solid matter present	0.05 % solids by weight

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Test temperatures:

Ambient	26 - 30 °C
Test fluid "A"	43 – 58.1 °C
Test fluid "B"	25 – 27.9 °C
Test fluid "C"	26 - 31 °C
Test water	23 - 30 °C

TEST FLUID "A"

Test Point 1	Influent: 1.0%	Effluent: 3.9 ppm
Test Point 2	Influent: 1.0%	Effluent: 3.7 ppm
Test Point 3	Influent: 1.0%	Effluent: 3.6 ppm
Test Point 4	Influent: 25.0%	Effluent: 3.9 ppm
Test Point 5	Influent: 25.0%	Effluent: 3.8 ppm
Test Point 6	Influent: 25.0%	Effluent: 3.8 ppm
Test Point 7	Influent: 100.0%	Effluent: 3.9 ppm
Test Point 8	Influent: 0.0%	Effluent: 3.7 ppm
Test Point 9	Influent: 25.0%	Effluent: 3.6 ppm

TEST FLUID "B"

Test Point 10	Influent: 1.0%	Effluent: 1.5 ppm
Test Point 11	Influent: 1.0%	Effluent: 1.3 ppm
Test Point 12	Influent: 1.0%	Effluent: 1.6 ppm
Test Point 13	Influent: 25.0%	Effluent: 1.8 ppm
Test Point 14	Influent: 25.0%	Effluent: 1.6 ppm
Test Point 15	Influent: 25.0%	Effluent: 1.5 ppm

TEST FLUID "C"

Test Point 16	Influent: 6.0%	Effluent: 2.9 ppm
Test Point 17	Influent: 6.0%	Effluent: 3.1 ppm
Test Point 18	Influent: 6.0%	Effluent: 3.3 ppm

*** END ***