



Design Appraisal Document

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Date
19 August 2016

Please quote this reference number on all future communications
HPC 1610130/34881-16/JW/AC

**MACHINERY GENERAL DESIGN APPRAISAL
BALLAST WATER TREATMENT SYSTEM
MANUFACTURER: DESMI OCEAN GUARD
RAY CLEAN™ BWTS**

VALID UNTIL 18.08.2021

1. The documents listed in Appendix have been examined for compliance with the requirements of **Part 5, Chapters 12 and 25 and Part 6, Chapter 1 and 2 of the Rules and Regulations for the Classification of Ships, July 2016** and are assigned an appraisal status as indicated, subject to the following comments:-

2. Comments Electric-Control

- | | Status |
|--|--------|
| 2.1 This document is only covering class aspects of the ballast water treatment system (BWTS). | - |
| 2.2 It is understood that RayClean BWTS is not presenting hazardous atmosphere. However, it is not designed for the installation in hazardous areas. | - |

3. Comments Engineering

- | | |
|---|-----|
| 3.1 Installation in the ship including by-pass and isolation arrangement, fresh water supply, drain and back flush connection is to be in accordance with the according P&ID system and the manufacturer's installation instructions. | AQS |
| 3.2 By-pass and isolation valves are to be provided with remote means of operation and are to comply with Part 5, Chapter 12, 6.1.3 and 6.1.4. | AQS |
| 3.3 By-pass and isolation valves are to be provided with position indicators to give remote indication of valve position. | AQS |
| 3.4 The validity of this Machinery General Design Appraisal expires as shown above respectively change of Rules requirements, whichever comes first. | - |

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

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Appendix

1. The document(s) listed below has/have been examined

Document No.	Rev.	Title	Status	Date
10089	59	Operation Maintenance and Safety Manual for RayClean	SI	19/08/2016
-	-	OMSM – 11. Appendix	SI	19/08/2016
10110	11	Overview Main Components and Sizes – RayClean BWTS	SI	19/08/2016
151961	5	Requirement Specification Piping systems in steel used for Ballast water Treatment Systems	SI	19/08/2016
470440	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 100 NON-EX	A	19/08/2016
470441	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 200 NON-EX	A	19/08/2016
470442	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 300 NON-EX	A	19/08/2016
470443	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 400 NON-EX	A	19/08/2016
470444	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 500-600 NON-EX	A	19/08/2016
470445	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 700-800 NON-EX	A	19/08/2016
470446	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 900 NON-EX	A	19/08/2016
470447	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 1000-1200 NON-EX	A	19/08/2016

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Document No.	Rev.	Title	Status	Date
470448	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 1300-1500 NON-EX	A	19/08/2016
470449	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 1600 NON-EX	A	19/08/2016
470450	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 1700-1800 NON-EX	A	19/08/2016
470451	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 1900-2000 NON-EX	A	19/08/2016
470452	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 2100 NON-EX	A	19/08/2016
470453	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 2200 NON-EX	A	19/08/2016
470454	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 2300-2400 NON-EX	A	19/08/2016
470455	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 2500 NON-EX	A	19/08/2016
470456	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 2600-2700 NON-EX	A	19/08/2016
470457	A	P&ID Piping and Instrumentation diagram RAYCLEAN™ BWTS 2800-3000 NON-EX	A	19/08/2016
70742	0	Risk Assessment	SI	19/08/2016
107315	A	UV Cassette Body RayClean 1.4404	A	19/08/2016
170357	A	Flange DN250 PN10 Outlet	SI	19/08/2016
170253	-	Flange for UV Cassette RayClean MK.IV	SI	19/08/2016
170252	-	Flange for UV Cassette RayClean MK.IV	SI	19/08/2016
170351	A	Socket 1" BSPP	SI	19/08/2016
170352	A	Socket 1/2" BSPP	SI	19/08/2016
170335	A	UV Inlet Cone DN250 RayClean	SI	19/08/2016
170233	-	Cone for Inlet RayClean MK.III	SI	19/08/2016
170258	-	Flange for Inlet Cone RayClean MK.IV	SI	19/08/2016
170231	-	Flange for Inlet Cone RayClean MK.III	SI	19/08/2016
DANAK19/14301	A	DELTA Test Report	SI	19/08/2016
70896	-	FQ Control Parameters	SI	19/08/2016
10089	59	Operation Maintenance and Safety Manual	SI	19/08/2016
60661	-	Operation Maintenance and Safety Manual Appendix 11	SI	19/08/2016
P-xxxx	-	RayClean-MCP Drawing (107 Pages)	A	19/08/2016

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2. Documents not mentioned above are not required for appraisal or as supporting documentation and have not been retained.

Appraisal Status Key

- | | |
|-----|---|
| A | Approved - provided the arrangements are to the surveyor's satisfaction |
| AQS | Details to be submitted by the client to the local surveyor's Office responsible for surveying the building and the arrangements verified in accordance with the Rule/Regulations requirements by the surveyor. |
| SI | Retained as supporting documentation for information only |

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