

Out of commission: how to respond to a negative BWMS commissioning test

19 January 2022 • 09:00-09:45 GMT

Presentation & sponsor documents:

Page 2: Andreas Lougridis, Maritec

Page 21: Cees van Slooten, Control Union Certifications

Page 28: Sahan Abeysekara, Lloyd's Register

Page 35: Michael Haraldsson, Chelsea Technologies

Page 40: Maritec company information

Part of

Ballast Water
Webinar Week

18-20 January 2022

#ballastwater

Premier partner



Sponsored by



BALLAST WATER
TREATMENT TECHNOLOGY

Efficacy Validation for Ballast Water Management System

19 Jan. 2022



MARITEC

Member of **CTI** Group





Who We Are



Parent Company based in
Shenzhen, China

Founded **2003**

Testing-Inspection-Certification

Across 18 different industries

150+ laboratories

70+ Branch Offices



Based in Singapore

Founded **1999**

Marine Fuel testing & solution

Acquired by CTI in **June 2020**

Combined all CTI's marine services and
Fuel testing offered by **Maritec**
branding





Our Range of Services

Marine Environmental Services

- Ballast Water Testing
(commissioning test/VGP test)
- Grey Water Testing
- Oily Water Testing
- Scrubber Water Testing
- Potable Water

Marine Fuel Testing & Solutions

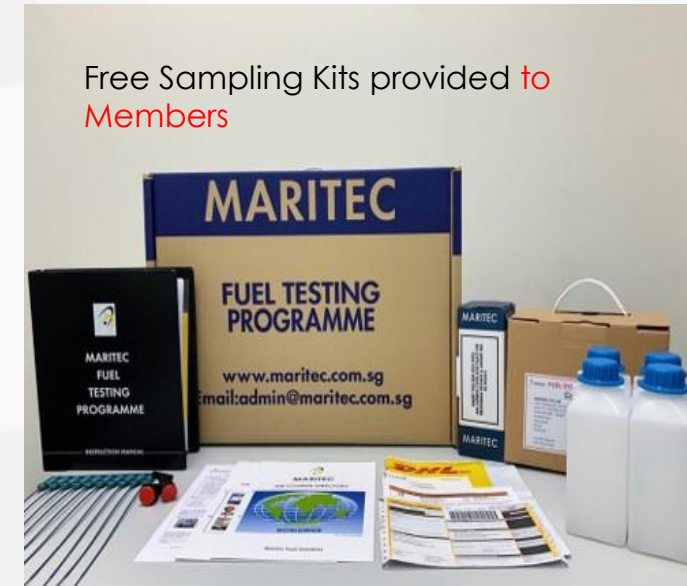
- Marine Fuel Testing Programme(MFTP)
- Enhanced Fuel Analysis Package
- Bunker Forensic and Extended Analysis
- Fuel System Check(FSC)
- Bunker Quantity Surveys(BQS)
- Lube Check Programme

Hong Kong Convention & EU Ship Recycling Regulation Compliance

- Inventory of Hazardous Materials (IHM)
- Lab Hazmat Tests
- IHM Maintenance
- Responsible Recycling Supervision

Asbestos Solutions

- Asbestos Surveys
- Asbestos Removal / Abatement
- Asbestos-free Certification



Our Water Testing Qualifications

Lloyd's Register Approved Service Supplier

Supplier: **Centre Testing International Group Co., Ltd.**
 Address: CTI Building, Xingdong Community, Xin'an Sub-District, Bao'an District, Shenzhen, Guangdong, 518133, China
 Contact Details: Email: marine.sales@cti-cert.com
 Contact Number: Tel: +86 (021) 31073317; Fax: +86 (021) 31071000

The above company having been assessed hereby receives approval in accordance with the requirements of Lloyd's Register Procedures for Approval of Service Suppliers as Supplier from the address(es) listed above for the provision of:

Commissioning Testing of Ballast Water Management Systems (BWMS)

Indicative analysis for all size classes relevant to BWMS2/C10/Rev.1, a Lamalitha B-QIA ATP based indicative test method, a Salinix Ballast Eye Pulse counting ICA method, Laboratory Detailed analysis by Microscopy (IDNA/CFDA method)

This approval is conditional upon the Supplier maintaining the documented scheme as audited by any member of the Lloyd's Register Group and hereby approved, and notifying Lloyd's Register in writing of any change to that scheme including any change in personnel, equipment or procedures. This certificate is issued for the Supplier and, subject to the Supplier complying with the necessary conditions, is valid to the date referred to above.

18th Floor, 500 Huo An Dong Road, Shanghai, Shanghai District China

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents, individually and collectively, referred to in this clause as 'Lloyd's Register', Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or for any error or omission contained herein. Unless otherwise specified, the services provided by Lloyd's Register are for the provision of this information or advice and in that case any responsibility or liability is excluded on the terms and conditions set out in our contract.

ABS

Certificate Number: 21-487329-9P
 Effective Date: 03/03/2021
 Expiry Date: 04/FEB/2025
 ABS Test Office: Guangzhou, China
 Website: www.cti-cert.com

CERTIFICATE OF Service Provider

This is to certify that the Quality Assurance System of

CENTRE TESTING INTERNATIONAL GROUP CO., LTD.

located at
 CTI Building, Xingdong Community, Xin'an Sub-District, Bao'an District, Shenzhen, China

having been audited by ABS and being given a satisfactory overall demonstration of the service listed below, is recognized by ABS as a Service Provider to provide below services. The validity of the Certificate is subject to annual surveillance audits.

Biological Testing of BWMS During Commissioning following Installation

It is the responsibility of the Service Provider to employ, train and qualify persons in the service provided. If the service requires approval from manufacturers, the service provider is responsible to maintain contact with the manufacturer and maintain any service manuals up to date. The ABS office issuing this certificate is to be kept updated with changes to the management of the company, its employees, equipment and modules on the authorization list and any changes made.

See enclosed Appendix for details regarding authorized personnel, manufacturer authorizations, and subcontractors, etc.

Yong Hui, Director

First Annual Endorsement: Supervisor: WO and Date
 Second Annual Endorsement: Supervisor: WO and Date
 Third Annual Endorsement: Supervisor: WO and Date
 Fourth Annual Endorsement: Supervisor: WO and Date

Service Provider Ref: 2 Page 1 of 2

DNV

APPROVAL OF SERVICE SUPPLIERS

This is to certify that

Centre Testing International Group Co., Ltd.
 Shenzhen, China

is granted acceptance for **Service Suppliers engaged in testing of Ballast Water Management Systems (validation of biological efficacy at commissioning), in accordance with Class Programme DVCL-CP-0484.**

This service supplier certificate will be accepted for use with all rule sets published by DNV. See the following page(s) for details regarding application.

This Certificate is valid from **2021-04-08** to (inclusive) **2024-04-07**

This Certificate is issued on **2021-04-08** for **DNV**

The document has been digitally signed and will therefore not have handwritten signatures.

Chen, Zhi Feng Bruce
 Surveyor

This Certificate is by its nature a:
 1. The service provider has been deemed to be in compliance with the requirements of the service supplier.
 2. The service provider has been deemed to be in compliance with the requirements of the service supplier.
 3. The service provider has been deemed to be in compliance with the requirements of the service supplier.
 4. The service provider has been deemed to be in compliance with the requirements of the service supplier.

LLOYD'S REGISTER assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or for any error or omission contained herein. Unless otherwise specified, the services provided by Lloyd's Register are for the provision of this information or advice and in that case any responsibility or liability is excluded on the terms and conditions set out in our contract.

ILAC-MRA CNAS

China National Accreditation Service for Conformity Assessment
LABORATORY ACCREDITATION CERTIFICATE
 (Registration No. CNAS L1910)

Centre Testing International Group Co., Ltd.
 (Legal Entity: Centre Testing International Group Co., Ltd.)
 CTI Building, Xingdong Community, Xin'an Sub-District, Bao'an District, Shenzhen, Guangdong, China

is accredited in accordance with **ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories)** for the competence to undertake the service described in the schedule attached to this certificate.

The scope of accreditation is detailed in the attached schedule bearing the same registration number as above. The schedule forms an integral part of this certificate.

Effective Date: 2020-04-03
 Expiry Date: 2024-03-04

Signed on behalf of China National Accreditation Service for Conformity Assessment

China National Accreditation Service for Conformity Assessment (CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CMAA) to operate the national accreditation schemes for conformity assessment. CNAS is a signatory of the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC-MRA) and the Asia Pacific Accreditation Cooperation Mutual Recognition Arrangement (APAC-MRA). The validity of the certificate can be checked at <http://www.cnas.org.cn/english/index.html#body/body/about>

- Class Approved
- ISO Accredited inhouse Labs
- Decades in Maritime Industry
- Worldwide network

Coming more....

APPROVED LR APPROVED SERVICE SUPPLIER

ABS FOUNDED 1862

DNV

ILAC-MRA CNAS 中国认可 国际互认 检测 TESTING CNAS L5541



Representative Offices World-Wide

MARITEC 2022

- ❖ 2 main product lines
- ❖ 170 Employees
 - 15 cities
 - 8 countries
 - 70 multi disciplinary labs spread in 5 continents

Headquarters-Singapore

In house offices

China
Malaysia
India
West EU (based in Greece)
South EU (based in Greece)
Philippines

Partners

Japan
South Korea
Taiwan
Hong Kong
Indonesia
Turkey
Norway
Netherlands
UAE

01 Reasons of Ballast Water Testing

02 Legislation Involved in Ballast Water Testing

03 BWMS Commissioning Test

04 Reasons behind occasional Test Failure

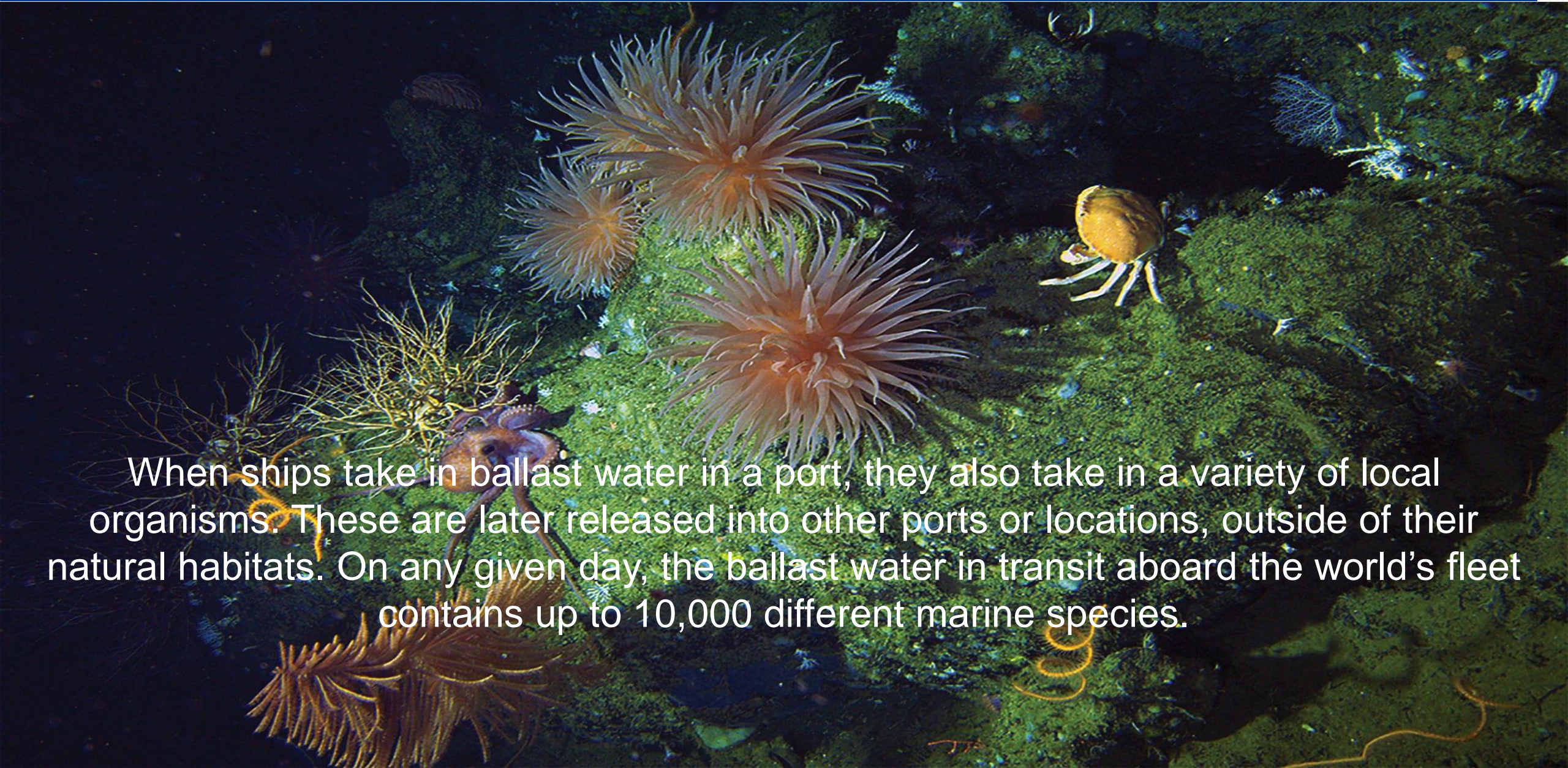
05 If a commissioning test fails, what happens next?



CONTENTS



Reasons of Ballast Water Testing



When ships take in ballast water in a port, they also take in a variety of local organisms. These are later released into other ports or locations, outside of their natural habitats. On any given day, the ballast water in transit aboard the world's fleet contains up to 10,000 different marine species.



Reasons of Ballast Water Testing

By regulation, in order to receive type approval & then, once fitted on ships, for the system to be certified, the water that has passed through the TREATMENT SYSTEM must be sampled and



TESTED

to ensure performance standards set by the IMO or, by the Authorities in the USA, are met, & the water may be legally discharged in coastal waters of a country.

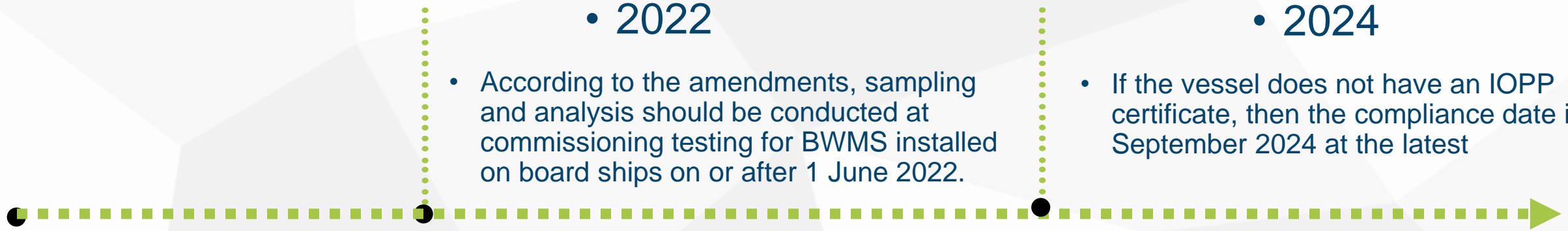


- ❖ The 76th meeting of the IMO's Marine Environmental Protection Committee (MEPC) published an informational paper – MEPC 76/INF.56 titled “Harmful Aquatic Organisms in Ballast Water”.
- ❖ MEPC 76/INF.56 listed the results of a small number of ballast water discharge sampling and analysis events. The results were very clear; almost a **third** of discharges were **significantly out of compliance biologically** and more than 20% were out of compliance technically / chemically (TRO). A larger data-set submitted to IMO by the World Maritime University show's similarly bad results.
- ❖ The INF.56 paper clearly demonstrated the need for “Compliance Monitoring Devices” (CMD's). Many discharges are out of compliance with D2, **BUT** INF.56 also indicated CMD's can give unreliable results - up to 15% “false positives” were recorded.
- ❖ MEPC 76 announced that the standard for CMD verification would be a new ISO Standard, ISO 3725. A Draft of which is planned to be available for review by IMO January 2022, It is expected the final Standards and Guidelines for CMD's will be in place in 2023.



BWMS Commissioning Test Requirements

Special Requirement from Flag States



• 2022

- According to the amendments, sampling and analysis should be conducted at commissioning testing for BWMS installed on board ships on or after 1 June 2022.

• 2024

- If the vessel does not have an IOPP certificate, then the compliance date is 8 September 2024 at the latest

Flag	Instructions by flag administrations
Australia	
Cyprus	<u>still requires to apply BWM.2/Circ.70 instead of BWM.2/Circ.70/Rev1</u>
Singapore	
Tuvalu	
Greece	
India	
Canada	
Croatia	
France	
Gibraltar	

Prior to the entering into force of this amendment by 1 June 2022, following flag administrations require the early implementation so that the sampling analysis to be conducted in accordance with their instructions.



BWMS Commissioning Test - Sampling

6

Stop de-ballasting, flow 1L water sample into bottle



Sample port connection

1



Filtrate ballast water by plankton net (at least 1m³)

2



During filtration, collect water samples from bucket into container (10-15L) for $\geq 10\mu\text{m}$, $< 50\mu\text{m}$ organisms

3



Field test of Self-monitoring parameters (e.g. TRO, Salinity / Temperature / UVT)

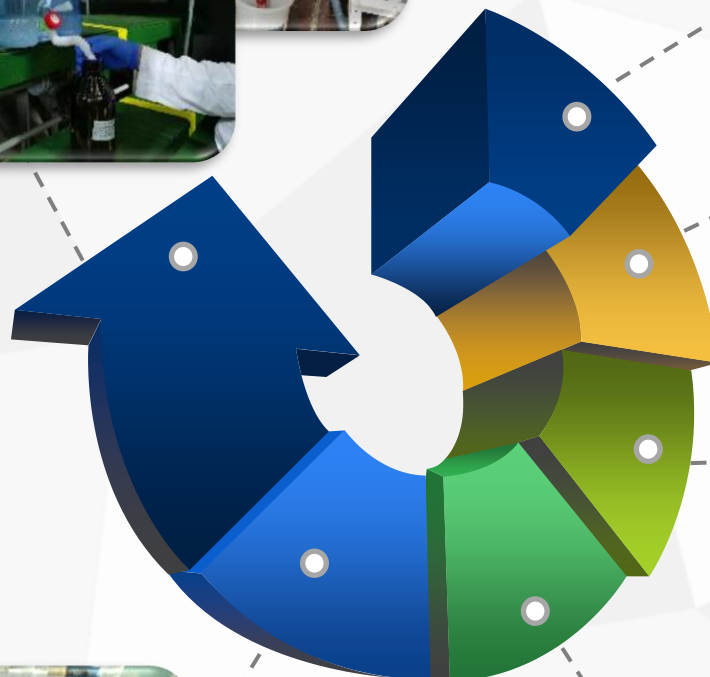
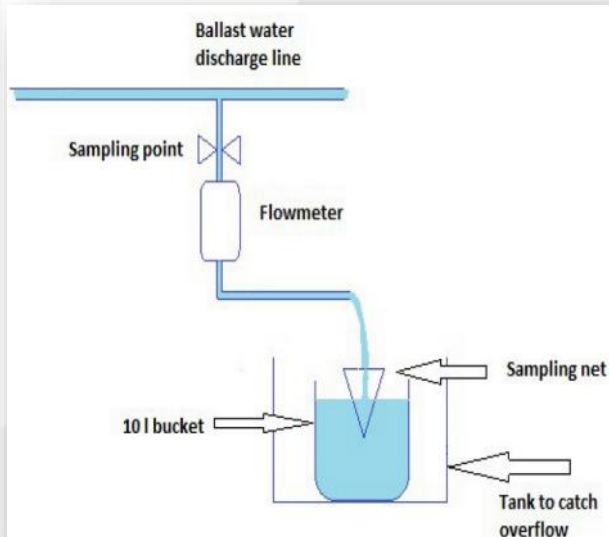
4

5

Flowmeter to indicate water amount filtrated (at least 1000L).



- Organisms > 50um
1. Sampling volume 1m³
 2. Concentrate to 1L as sample
- Organisms 10-50um
1. Sampling volume 10L
 2. Take 1L ex 10L (mixed) as sample

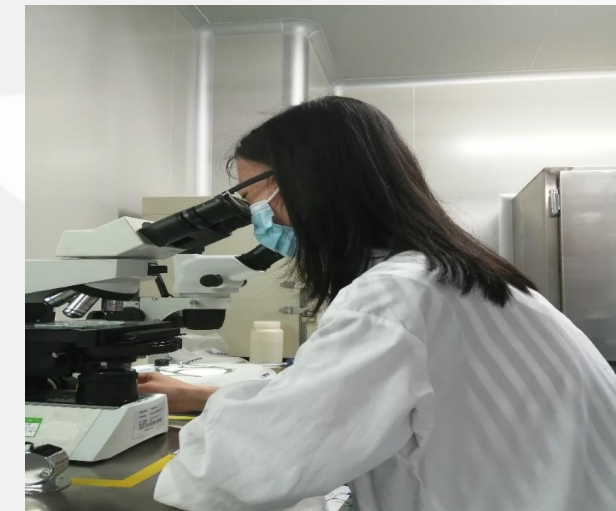




BWMS Commissioning Test

Indicative analysis and detailed analysis comparison

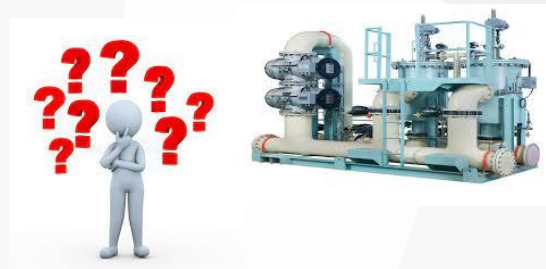
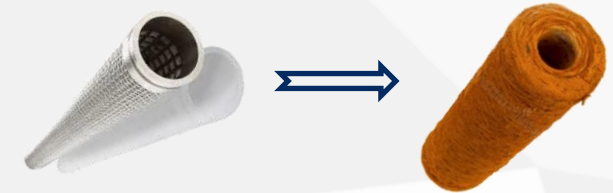
D-2 Standard	Indicative Analysis	Detailed Analysis
Purpose	To provide a quick, rough estimate of the number of viable organisms	To provide a robust, direct measurement of the number of viable organisms
Analysis Parameters	<p>Viable organisms ($\geq 50\mu\text{m}$) Viable organisms ($\geq 10\mu\text{m}$, $< 50\mu\text{m}$)</p> <p>Total Bacteria (Indicative analysis by using ATP method only result to reflect the 3 classes of bacteria)</p>	<p>Viable organisms ($\geq 50\mu\text{m}$) Viable organisms ($\geq 10\mu\text{m}$, $< 50\mu\text{m}$)</p> <p>Escherichia coli Enterococci Vibrio cholerae (O1 and O139)</p>
Time consuming	Within 1hr onboard	Several days
Required skill	Lower	Higher
Accuracy	Lesser (deviation 16%)	Greater
Confidence	Lower	Higher
Pricing	Lower	Higher





Reasons behind occasional Test Failure

1. **Poor and Uncleaned Condition of Ballast Tank**
2. **Ballast Intake of harbor waters**
3. **Clogged Water Filters**
4. **Sensor/UV Lamp/ Chemicals issues**
5. **Improper installation or not function**
6. **Improper handling and operating of the system by crew**





BWMS Commissioning Test Failures – Our Experience

Tank before cleaning



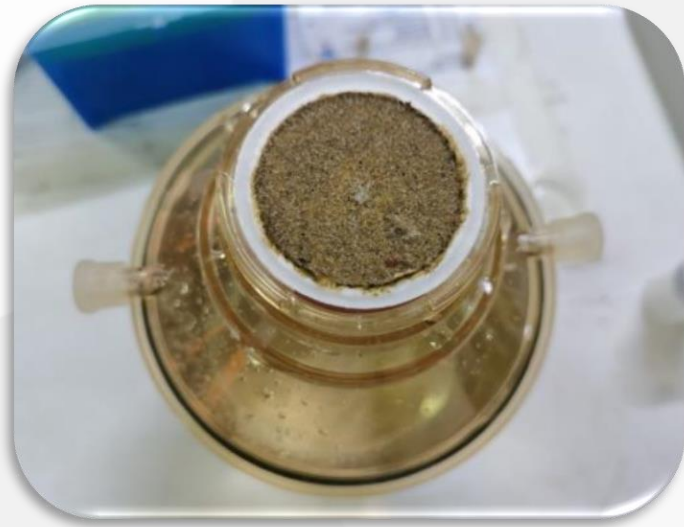
Tank after cleaning



B-QUA testing **before** tank cleaning

1st test results for Organisms $\geq 50\mu\text{m}$
= **69,002,788** pg/m³

(Limit Value 150,000 pg/m³)



B-QUA testing **after** tank cleaning

2nd test results for Organisms $\geq 50\mu\text{m}$
= **108,606** pg/m³

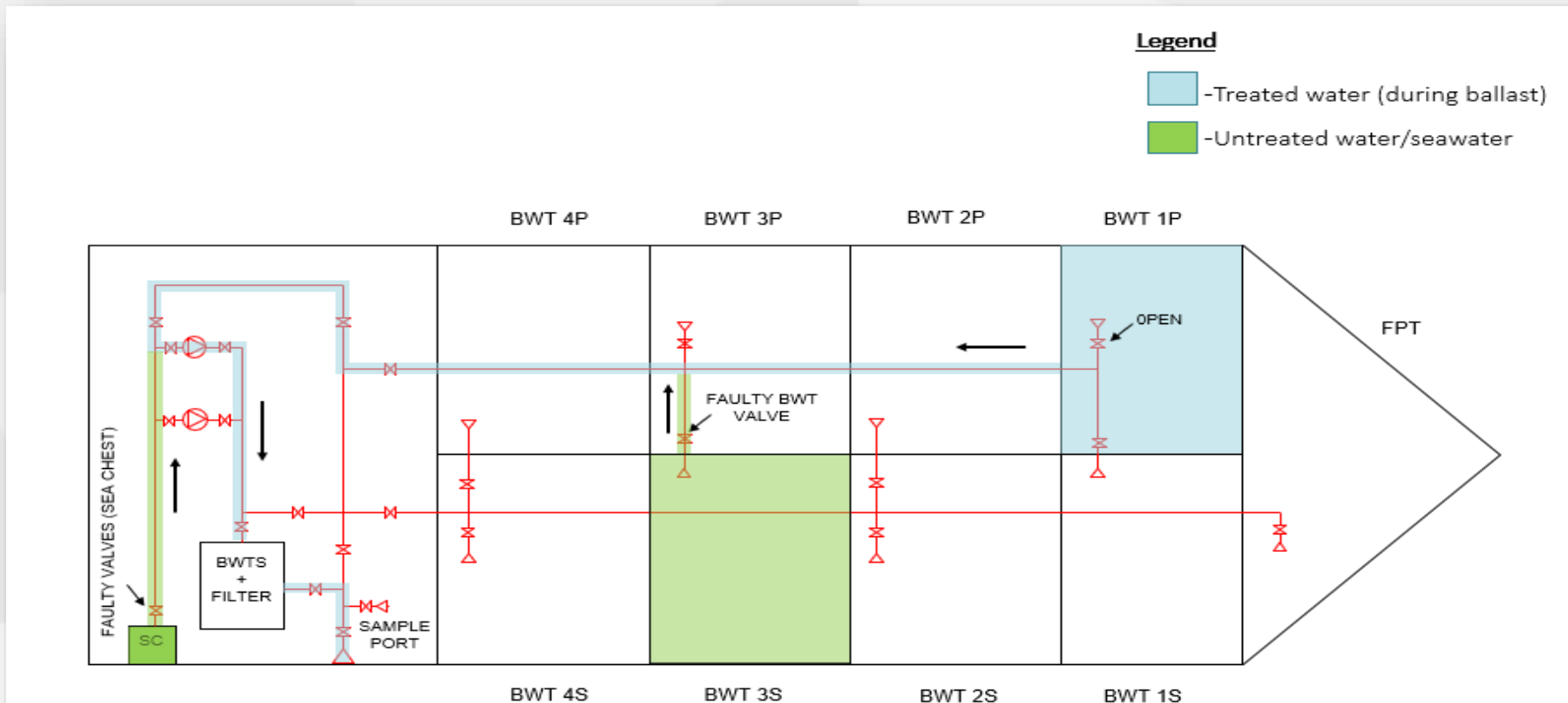
(Limit Value 150,000 pg/m³)





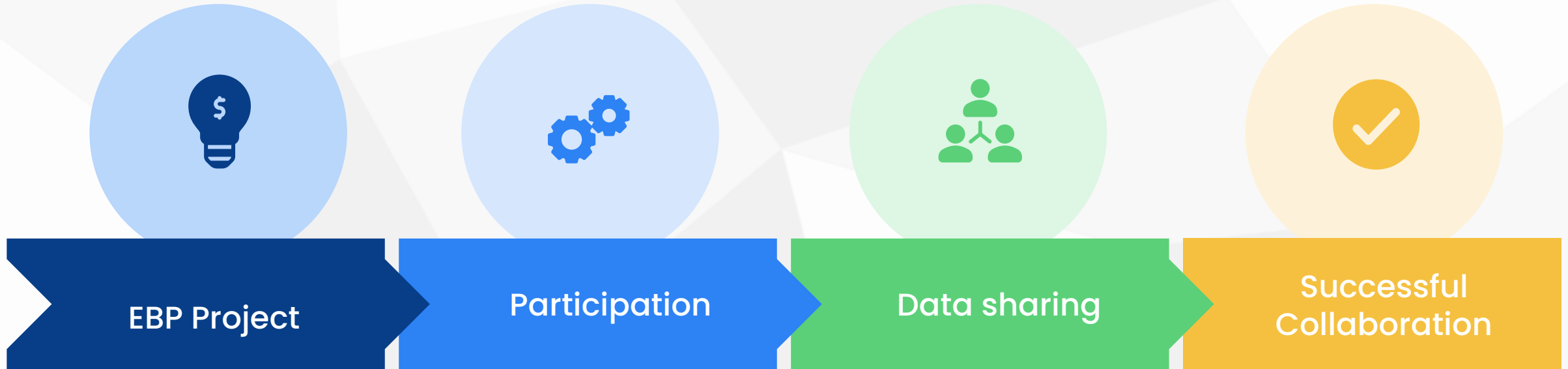
VALVE INTEGRITY EFFECTS

1. During de-ballasting & commission testing, faulty valve Source of 'unplanned suction'.
2. Unplanned suction from sea chest becomes source of contamination.
3. Unplanned suction from BWT containing untreated water becomes a source of contamination
4. Failure of commissioning test under such conditions





IMO Experience-Building Phase (EBP) on Ballast Water Management Convention (BWMC)



- BWM.2/Circ.74 issued on 20 May 2021 – MPEC in agreement with WMU set up an EBP project on the BWMC, to collect data from the industry

- CTI-Maritec participated in the IMO Experience-Building Phase (EBP21) project

- CTI-Maritec shared data on our Ballast Water commissioning biological testing activities

- CTI-Maritec as a independent third party, worked with the project team and experts in this BWMS industry to contribute as much as we can

Your one-stop Ballast Water Analysis & Solution provider

E-mail: admin@maritec.com.sg

Website: www.maritec.com.sg



**THANK YOU
FOR YOUR ATTENTION**

Global Services for you

**Singapore - China (inc Hong Kong, Taiwan)
- Greece - Turkey - Japan - South Korea -
Indonesia - Philippines - Malaysia - Middle
East - India**

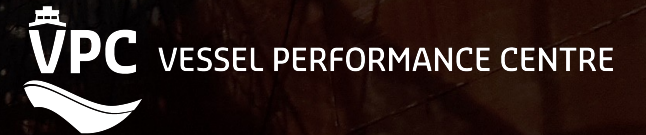
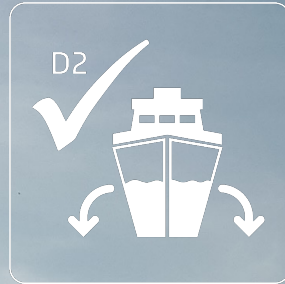


Question?



Out of Commission

How to avoid a negative BWMS
commissioning test
A CMD that meets all requirements?



This presentation and all information contained herein is Privileged and Confidential. It is intended only for the person or entity to which it is addressed. Any unauthorized review, use, disclosure, or (re)distribution is prohibited.

Cees van Sloten, PhD

January 19, 2022



Established in Rotterdam

1920



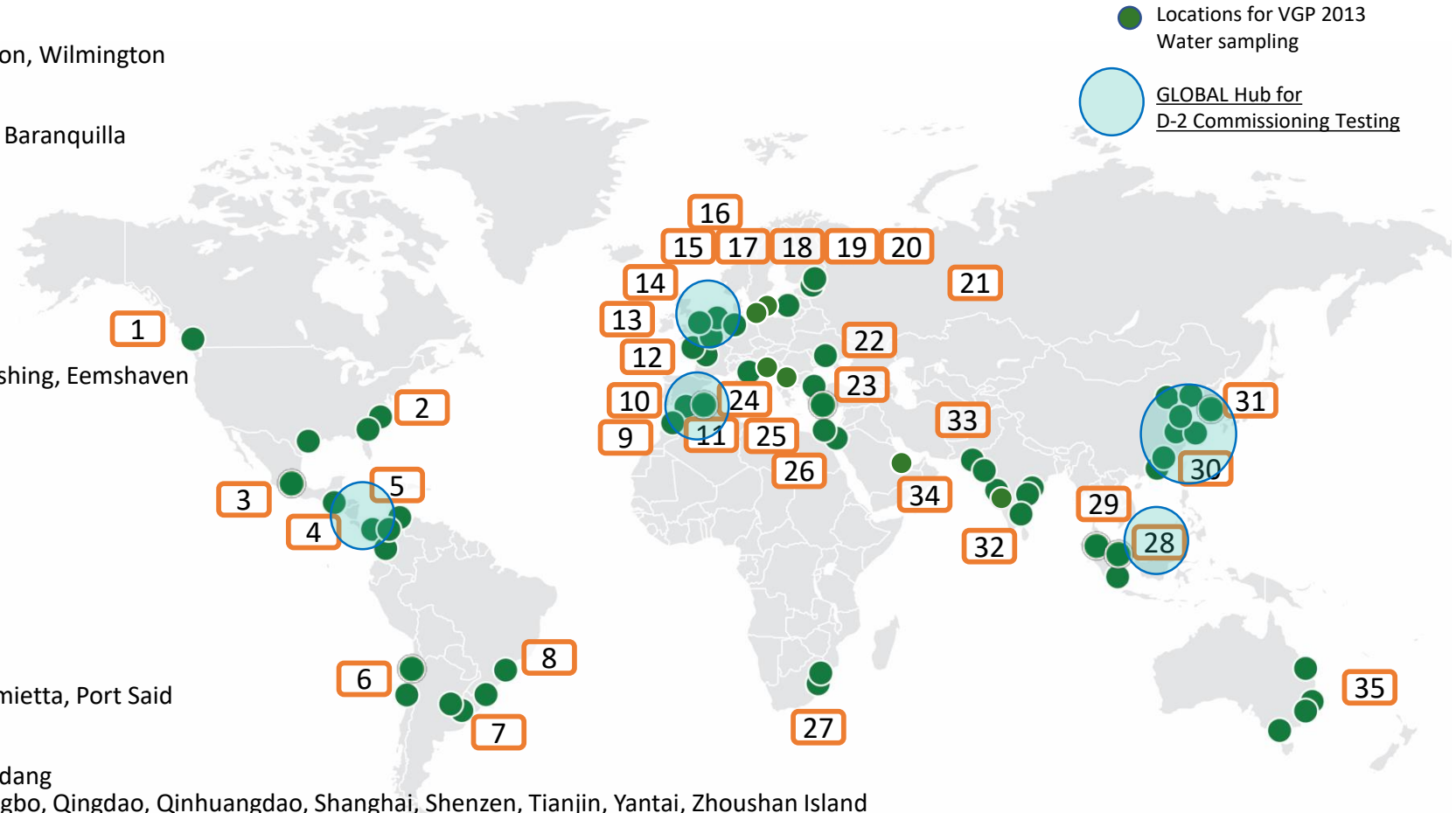
Family owned
non listed company.
Long term vision -
Thinking in generations.

75 Countries

5000+ employees

5 Global Hubs for D-2 CT and >90 key ports in 35 countries with VGP 2013 Sampling Services

1. **Canada:** Vancouver
2. **United States:** New Orleans, Houston, Galveston, Wilmington
3. **Guatemala:** Quetzal
4. **Panama:** Panama Canal
5. **Colombia:** Drummond, Sta. Marta, Cartagena, Baranquilla
6. **Chile:** San Antonio, Valparaiso
7. **Argentina:** Buenos Aires, San Lorenzo
8. **Brazil:** Santos, Paranaguá
9. **Morocco:** Casablanca, Jorf Lasfar
10. **Spain:** Algeciras
11. **UK:** Gibraltar, Teesport
12. **France:** Le Havre
13. **Belgium:** Antwerp, Ghent
14. **The Netherlands:** Amsterdam, Rotterdam, Flushing, Eemshaven
15. **Germany:** Hamburg, Bremen, Bremerhaven
16. **Denmark:** Aarhus, Copenhagen
17. **Poland:** Szczecin, Gdansk
18. **Lithuania:** Klaipeda
19. **Latvia:** Riga
20. **Estonia:** Muuga, Tallinn
21. **Russia:** Ust-Luga, St. Petersburg
22. **Ukraine:** Yushny, Odessa
23. **Turkey:** Istanbul / Bosporus, Iskenderun, Izmir
24. **Italy:** Ravenna
25. **Greece:** Thessaloniki, Piraeus
26. **Egypt:** Suez Canal, Alexandria, El Dekheila, Damietta, Port Said
27. **South Africa:** Richard's Bay, Durban
28. **Singapore**
29. **Malaysia:** Port Klang, Tanjung Pelepas, Pasir Gudang
30. **China:** Guangzhou, Lianyungang, Longkou, Ningbo, Qingdao, Qinhuangdao, Shanghai, Shenzhen, Tianjin, Yantai, Zhoushan Island
31. **South Korea:** Busan, Ulsan, Onsan, Pohang
32. **India:** Chennai, Cochin, Ennore, Gangavaram, JNPT, Krishnapatnam, Mumbai, Paradip, Visakhapatnam
33. **Pakistan:** Karachi, Port Qasim
34. **Qatar:** Doha, Ras Laffan, Mesaieed
35. **Australia:** Sydney, Newcastle, Brisbane, Melbourne



Commissioning Testing (CT)

Mandatory test ➤ 1 June 2022

Enforcing today ➤ Singapore, Cyprus, Portugal, etc.

Indicative vs Detailed ➤ IMO vs Flags

CMD validation ➤ IMO protocol – PPR 10 (2023)

Preparation prevents negative tests

Scope ➤ **Circ.70 or Rev.1**

BWTS malfunction ➤ **Installation – Training – Operation**

Challenging water ➤ **Check ambient water**

Contaminated vessel ➤ **Tanks – Piping – Valves**

False-positive ➤ **Check CMD data → Detailed analysis?**

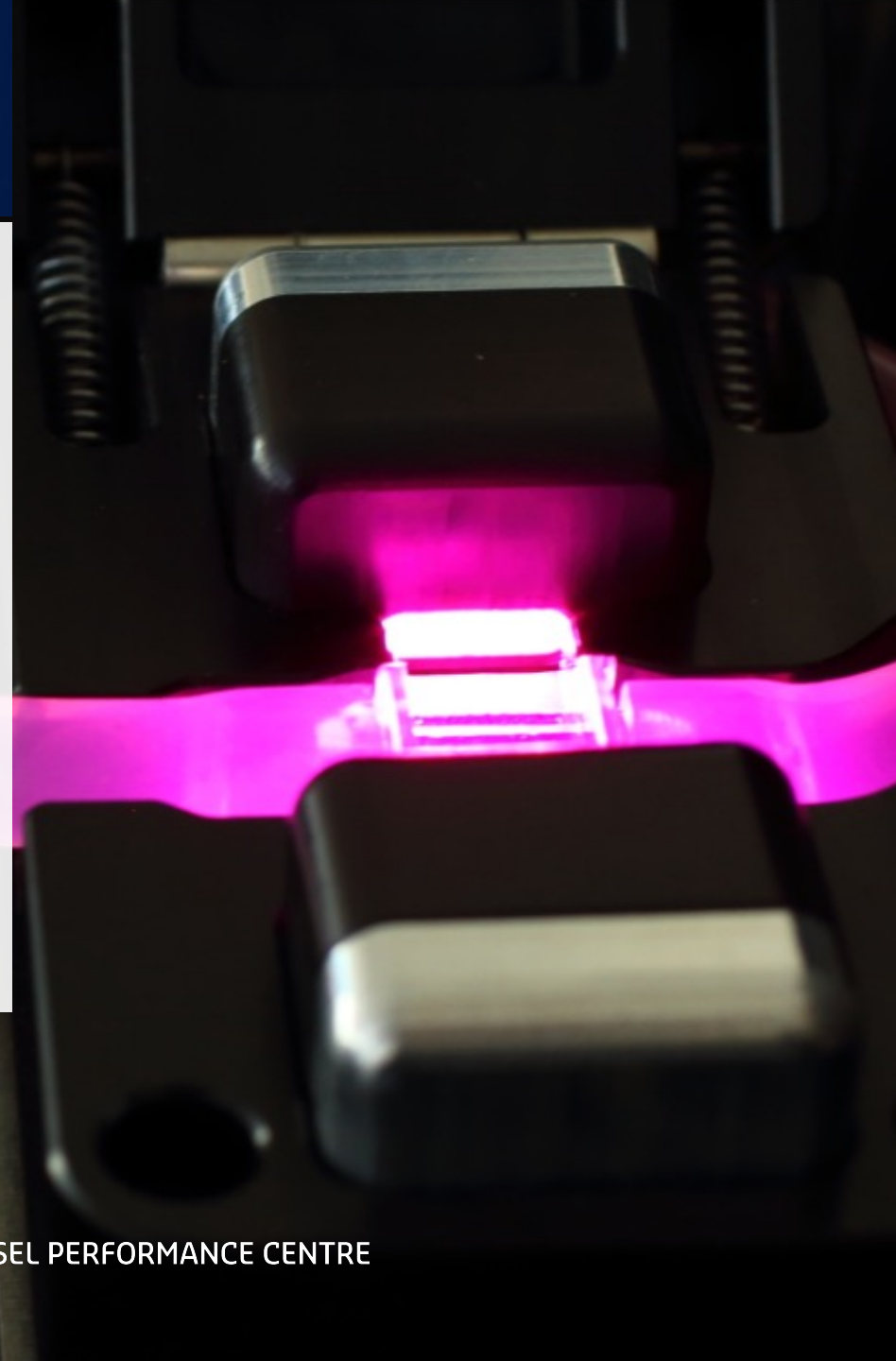
CMD - BallastWISE

Scope ➤ **>50 μ m & 10-50 μ m**

Vitality ➤ **Motion tracking**

Chlorophyll activity ➤ **PAM fluorescence**

Video recording ➤ **Expert-review**





D-2 Commissioning Testing of BWTS

Whitepaper content:

- What the BWM Convention implies?
- What is D-2 Commissioning Testing?
- Why do I need D-2 Commissioning Testing?

What it is and why you need it.

VPC VESSEL PERFORMANCE CENTRE

We propel shipping to sustainability,
also by sharing expertise.

For more information:

Contact us: info@vesselperformancecentre.com

Or download our Whitepaper

<https://bit.ly/3weqUsP>

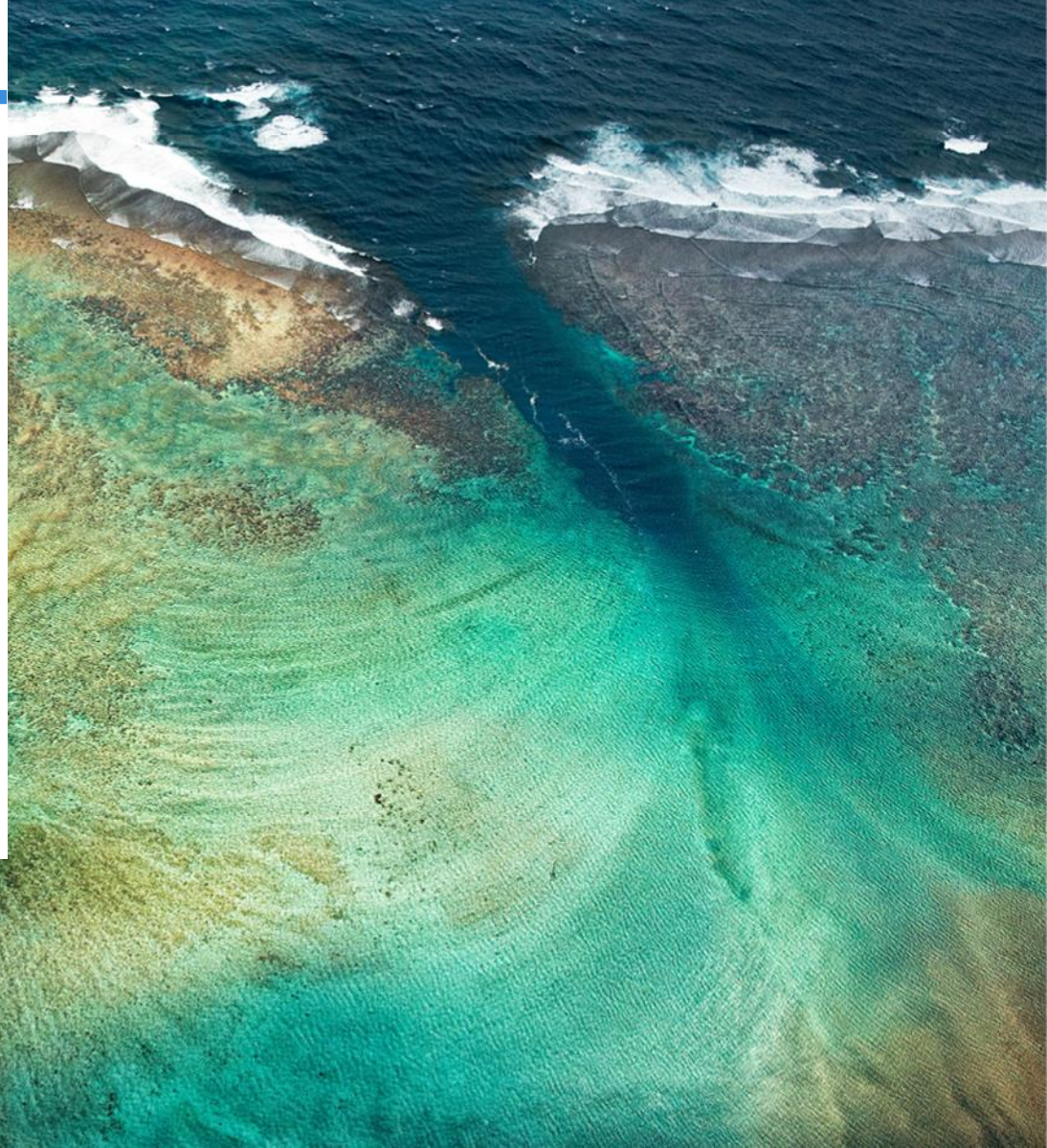
 **CONTROLUNION**

 **VPC** VESSEL PERFORMANCE CENTRE

BWMS commissioning testing – responding to a negative results

Sahan Abeysekara

January 2022



Amendment to the BWM Convention

Regulation E-1.1.1 and E-1.1.5

- Following is added to the existing regulation,

“this survey shall confirm that a commissioning test has been conducted to validate the installation of any ballast water management system to demonstrate that its mechanical, physical, chemical and biological processes are working properly, taking into account guidelines developed by the Organization.”

Adopted at MEPC-75

EIF – 1ST June 2022

BWMS Commissioning Testing

BWM.2/Circ.70, rev1 Guidance for the commissioning testing of BWMS

- The purpose of commissioning testing is to validate the installation of a ballast water management system (BWMS) by demonstrating that its mechanical, physical, chemical and biological processes are working properly. Commissioning testing is not intended to validate the design of type-approved BWMS that are approved by the Administration.
- The commissioning test is successful if the indicative analysis indicates that the discharge samples do not exceed the D-2 standard for the size classes analysed and the self-monitoring equipment indicates correct operation.

BWMS Commissioning Testing.. continues

BWM.2/Circ.70, rev1 Guidance for the commissioning testing of BWMS

- Whilst there is no specified challenge condition for the ambient uptake water and local ambient water should be used, should the ambient water condition not be appropriate for the operation of BWMS (e.g. salinity of ambient water is outside the SDL of the BWMS), testing should be evaluated to the satisfaction of the administration.
- Indicative analysis equipment used should be to the satisfaction of the Administration. Indicative analysis is defined in BWM.2/Circ.42/Rev.1 as may be amended.
- The collection and analysis of the representative samples should be independent of the BWMS manufacturer or supplier and to the satisfaction of the Administration.

Acceptable commissioning testing report

What could go wrong?

- Technical issue – exceed D-2 standards, BWMS operate outside SDL, Ambient water not appropriate, BWMS not operate in correct mode (As per IMO TA)
- Quality issues- not use acceptable indicative analysis methods/equipment, not collected minimum sample volume, sample not collected from G2 sampling point, not assessed all applicable self monitoring parameters, report not include all relevant information
- Other issues – BW tanks not cleaned, leaking valves, discharge cannot take place due to hold time, service supplier is not independent from the BMWS manufacturer or suppliers.

More Information

Visit: <https://www.lr.org/en/ballast-water-management-system-commissioning-testing/>
<https://www.lr.org/en-gb/ballast-water-management/>



Thank you

Sahan Abeysekara, Lloyd's Register

Principal Specialist, Technical Authority BWM, Marine & Offshore

T: +44 (0) 330 41 40357

E: sahan.abeysekara@lr.org

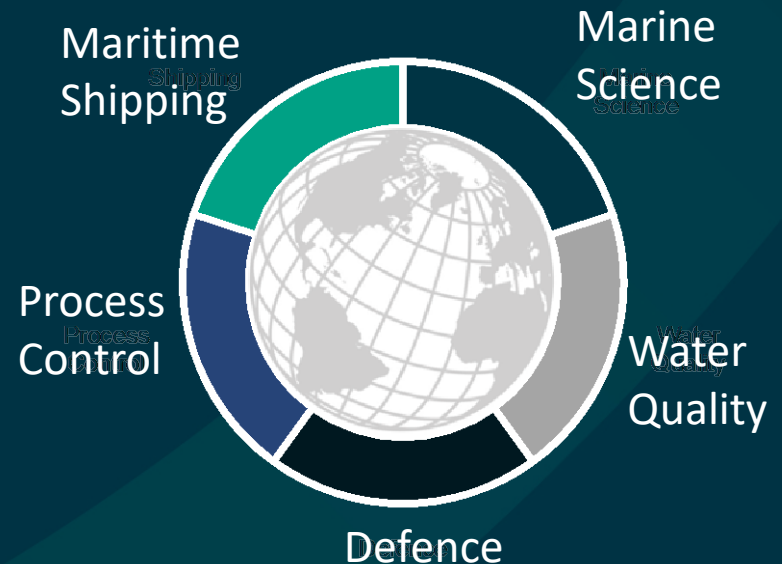
E: Engineering@lr.org

Lloyd's Register EMEA

Lloyd's Register Global Technology Centre, Southampton Boldrewood
Innovation Campus, Burgess Road, Southampton, SO16 7QF

FastBallast – The indicative instrument that is almost the same as Lab Test

Michael Haraldsson
mharaldsson@chelsea.co.uk

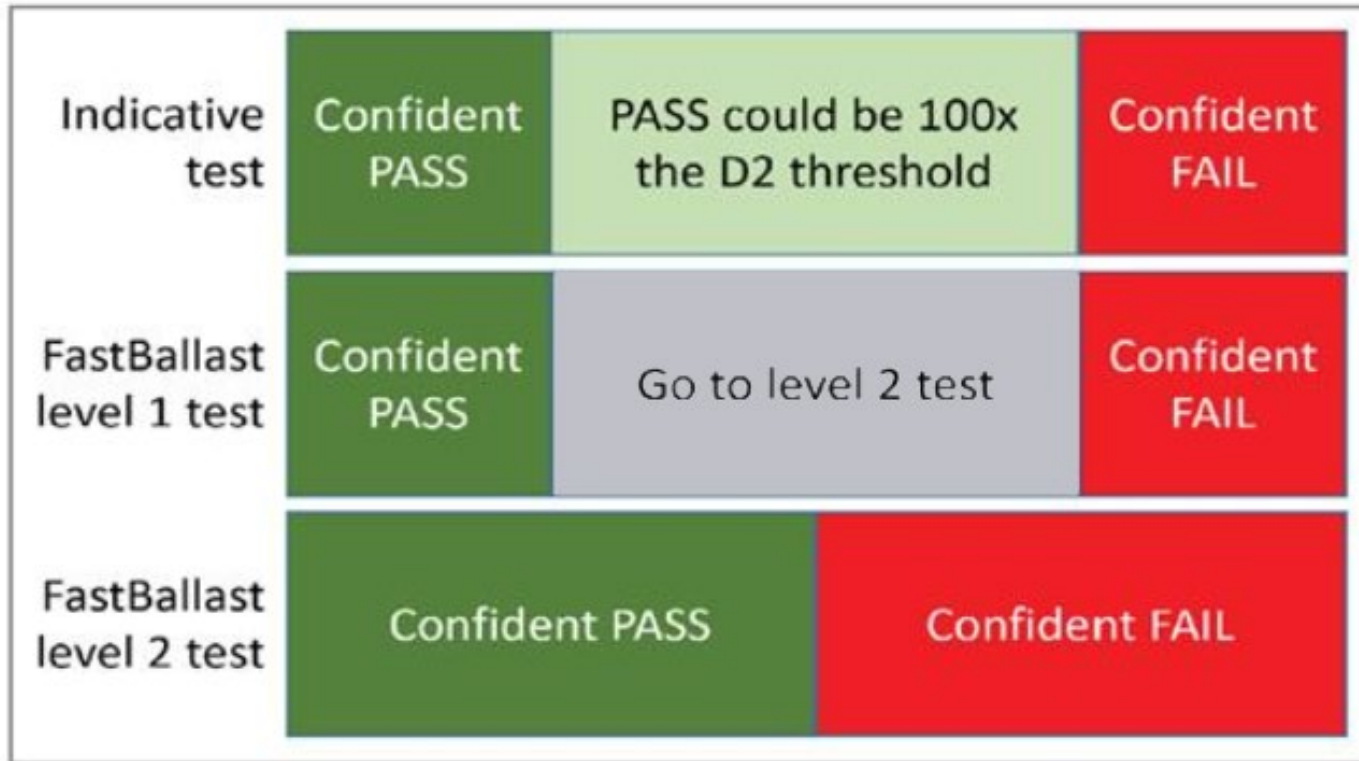


Our Solution: FastBallast – Ballast Water Monitor



- Provides rapid, on board compliance testing to the D2 limit (10 - 50 μm in the smallest dimension)
- Detection limit of < 1 cell/mL
- Up to 20ml sample
- Size-independent measurement of cell density
- No Consumables/Chemicals or sample preparation required
- Long service intervals (greater than two years)

FastBallast Vs Indicative Testing



Fraction	ATP Concentration			
	Unit	Most Likely Compliant	Signal Close to Limit	Most Likely Not Compliant
> 50 um	pg/m ³	< 150,000	150,000 to 750,000	> 750,000
10-50 um	pg/mL	< 500	500 to 1,500	> 1,500
Bacteria	pg/100 mL	< 1,000	1,000 to 5,000	> 5,000

FastBallast – InLine Ballast Water Monitor

- Chelsea Technologies has designed a device that can measure 10-50 inline during dis-charge of ballast water without reducing the flow in the ballast pipe based on our Technology we already have in the house.
- This can help owners/manager and charter companies to prevent a surprise in the vent of PSC ask to take a sample and it fail. This could be very costly.
- If owner will get an early indication, they can contact the manufacturer and have the system serviced without any delay

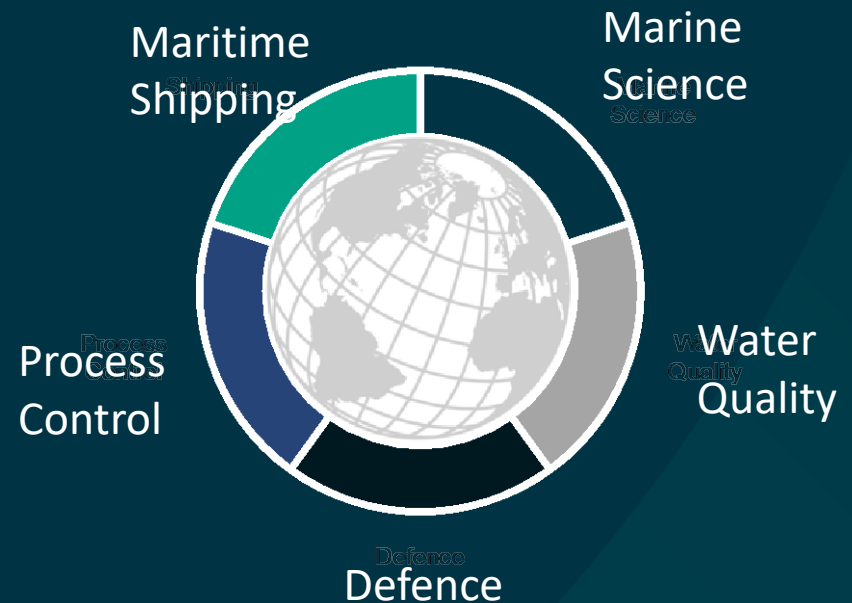


Thank you

Michael Haraldsson

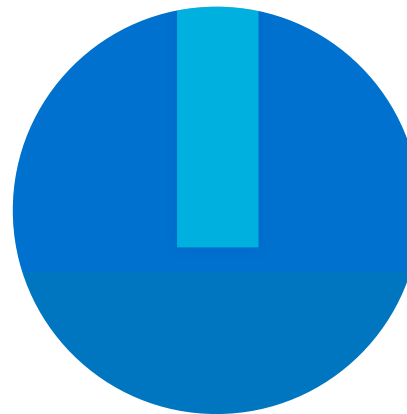
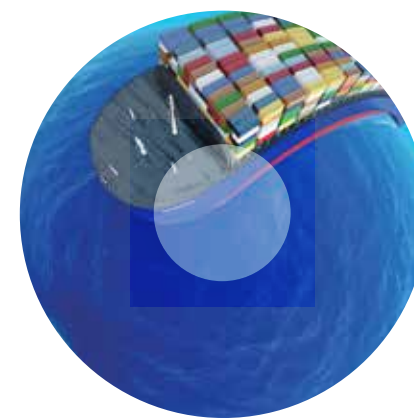
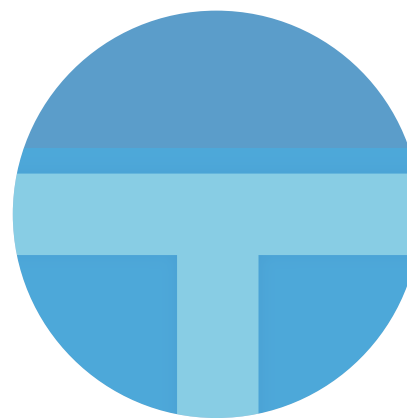
mharaldsson@chelsea.co.uk

www.chelsea.co.uk



World-class sensors and systems
trusted for their

- Sensitivity
- Precision
- Reliability
- Sophistication



FUEL TESTING SOLUTIONS & MARINE ENVIRONMENTAL SERVICES



Website

Maritec Pte. Ltd.
A member of CTI Group
Email: admin@maritec.com.sg

www.maritec.com.sg





**ONE STOP FUEL TESTING SOLUTIONS &
MARINE ENVIRONMENTAL SERVICES PROVIDER**

CTI-MARITEC

Introduction

Maritec Pte Ltd. provides a comprehensive suite of marine environmental services and fuel testing solutions to ensure vessel compliance with global shipping regulations in order to contribute towards the sustainability and future health of the world's oceans.

Maritec Laboratories Pte Ltd was first incorporated in 1999 as a marine fuel laboratory providing analysis and technical advice to a portfolio of international shipping companies. In May 2005, the company was acquired by a group of marine fuel specialists from DNV Petroleum Services leading to the company being renamed Maritec Pte Ltd. The new management team, brought enhanced domain knowledge and expertise, allowing Maritec to provide technically superior fuel quality services at highly competitive rates. Since then, Maritec has become one of the leading marine fuel testing and advisory organizations worldwide.

In June 2020, Maritec was acquired by Centre Testing International Group (CTI Group). Within a few months, the Marine Services Division of CTI Group was fully integrated within Maritec. It was through this acquisition and subsequent integration, Maritec is now able to provide comprehensive inspection, testing, certification and consultancy services for the assurance of Marine fuel quality and environmental regulatory compliance.

Through leveraging the resources and wider expertise of CTI Group, Maritec's employees today consist of multiple professionals across the marine, petroleum, electrical, environmental, chemical, legal and information technology sectors who deliver a first-class service to the marine customer.

Marine Services offered by our subsidiaries:

- ★ MARITEC PTE. LTD.
- ★ POLY NDT PTE LTD
- ★ Maritec (Shanghai) Co., Ltd.
- ★ Centre Testing International Pinbiao (Shanghai) Co.,Ltd.



Why choose CTI-Maritec

Fuel Testing & Solutions

- ★ One of the leading Marine Fuel Testing Laboratories globally, with an extensive range of domain knowledge
- ★ Accredited Inspection Body under ISO17020 & Accredited Laboratory under ISO17025
- ★ Appointed by Singapore Maritime Port Authority (MPA) as Mass Flow Meter Verifier
- ★ Fuel testing laboratory operates 365 days a year, unaffected by national holidays
- ★ Highly accomplished staff with up-to-date expertise, equipped with state-of-the-art tools to provide the latest technology required in forensic and extended analysis techniques
- ★ Preferred laboratory by P&I club
- ★ Fuel Oil Sampler with design approval in accordance with Class guidelines.

Fuel Testing & Solutions Accreditation



Ballast Water Analysis Accreditation



Environmental Services

- ★ Class approved Ballast Water Management Systems (BWMS) commissioning test supplier
- ★ Worldwide network for Ballast Water VGP test and HazMat solution
- ★ The world's leading international company for Hazardous Materials (HazMat) investigations, lab testing, mitigation and consultancy
- ★ Accredited by United Kingdom Accreditation Service (UKAS) as the Inspection Body under ISO 17020 and an Accredited Laboratory under ISO 17025
- ★ Accepted by Flag States such as Australian Maritime Safety Authority (AMSA), National Security Inspectorate (NSI), Liberia Maritime Authority, Marshall Islands Registry
- ★ Approved by all Major International Association of Classification Societies (IACS) classification societies, including:ABS, BV, DNV, LR, CCS, KR, RINA

IHM & Asbestos Solutions Accreditation



Testimonials

"Fleet Management (FML) have been working with CTI since 2010 to control the use of asbestos in the construction of our new-building projects. CTI has trained our superintendents to understand the basic rules and procedures behind controlling risks created by asbestos during the building process. As the only UKAS accredited marine asbestos inspection body, their quality and technical procedures are accredited by UKAS and endorsed by Netherland Flag State. We would highly recommend CTI to the industry."

—Mr. Dilip Krishnan Nair, New-building General Manager



"I commend CTI's approach to addressing the asbestos import standards for goods destined for Australia. Australian Customs accepts inspection and testing results from overseas companies accredited by authorities listed in the Mutual Recognition Agreement facility on NATA's Australian website. I note you have been accredited by UKAS for marine asbestos inspections and UKAS do appear on the NATA Mutual Recognition Agreement."

—Myles Pickett, Manager Pre-Clearance Intervention & Targeted Compliance Response, Australian Customs and Border Protection Service



"In the past two years, you were able to provide a comprehensive service to our fleet including new building surveys, target sampling during docking periods, asbestos removal, IHM preparation, recycling supervision and asbestos management auditing for our suppliers. Maritec are an excellent provider that has carried out inspections, testing and reports for hundreds of our vessels. The team is always compiles a holistic and tailored plan for each project. I would particularly like to mention to the impressive efforts made by Maritec in order to meet the demands of French marine regulations."

—Holande Mickael, CMA CGM SAFETY OFFICER



"I am writing this letter to recommend the excellent services of Maritec which have helped our company to provide prompt fuel analysis with sound technical advisory on fuel quality. They have always been reactive to our needs and fully supportive whenever we have had enquiries throughout the years."

—Eric Kiang/ Wan Hai Lines Ltd



Our Major Clients



FUEL TESTING & SOLUTIONS



Marine Fuel Testing Programme

Marine Fuel Testing Programme (MFTP) serves as a Machinery Damage Prevention and Fuel Management Programme specially designed for Ship Owners and Operators whose vessels receive Marine Bunker Fuel worldwide in accordance with ISO8217 specifications. Our MFTP package aims to highlight potential problems and provide assistance in complying with safety and environmental legislation, such as SOLAS and MARPOL respectively.



Enhanced Fuel Analysis Package

Contaminations from chemical and industrial effluents have become a serious concern in recent years. Several incidents have been recorded of vessels becoming totally immobilized by chemical waste in the bunkers delivered to ports. Our Enhanced Fuel Analysis Package is offered as a supplementary package to MFTP, and provides an extra layer of protection to vessels carrying deleterious materials, waste chemicals whilst making technical considerations of their stability properties.



Bunker Forensic & Extended Analysis

In the unfortunate event that a fundamental bunker analysis has met specification requirements yet despite this, machinery was damaged in the process. Investigations are time consuming, often requiring a high level of forensic and extended analysis to detect causes such as contaminants, low combustion quality and other possible factors. We have assisted many of our clients through troubleshooting, ascertaining causes, offering solutions as well as providing supporting documentation for claims.



Fuel System Check

Catalytic fines (also known as catfines) are aluminium and silicon oxides used during refinery to allow catalytic cracking; if not monitored catfines can then accumulate in the fuel oil system, the consequences of which can be devastating. By performing an extensive fuel system check on vessels, we can help your business mitigate potential disasters from happening.



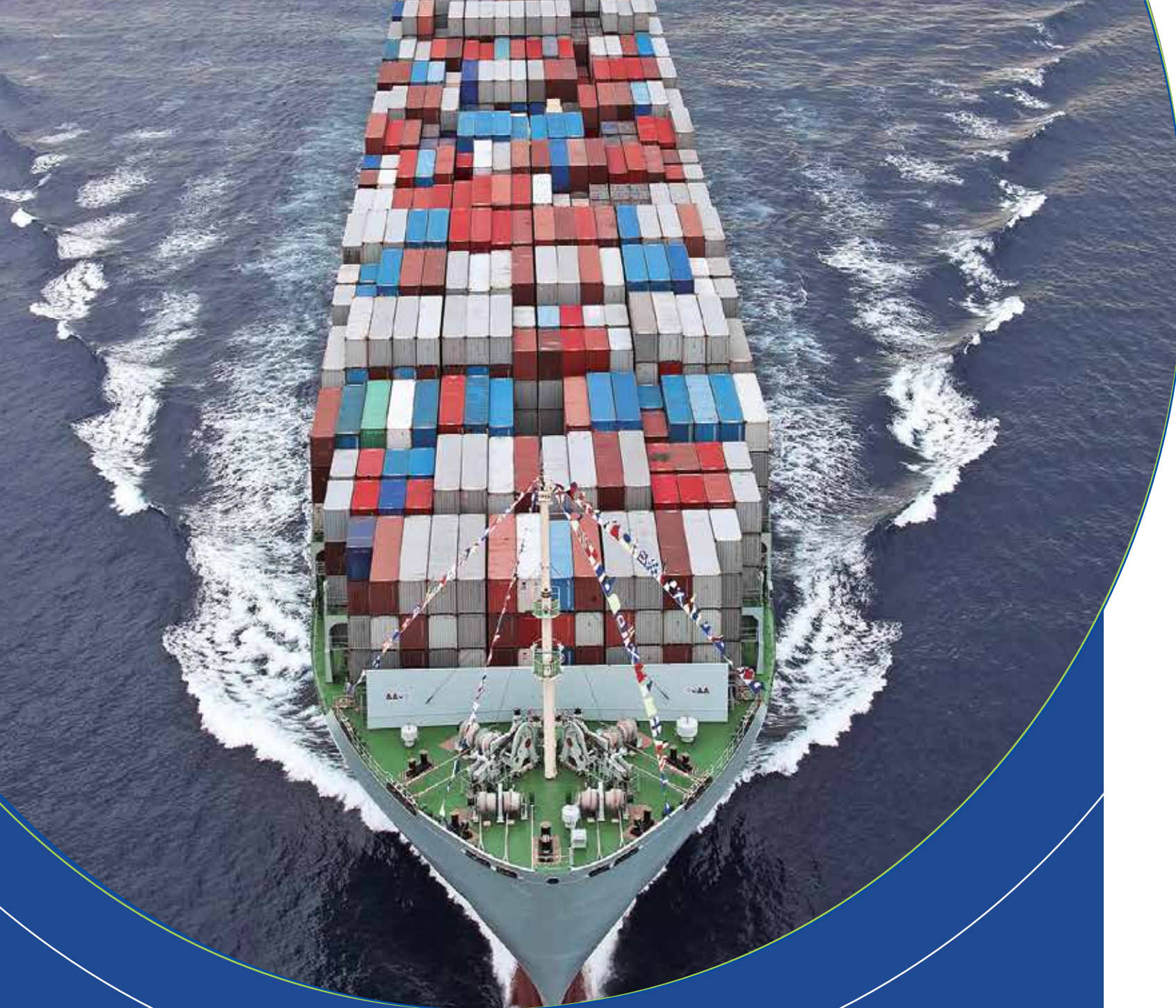
Bunker Quantity Survey

We provide professional and impartial assessments of bunker fuel quantity delivered, while priding ourselves in being able to respond to a job request at short notice. With over 15 years of experience in the bunker industry, our qualified and dedicated team of bunker surveyors are capable of conducting bunker quantity surveys based on your vessel requirements. All of our bunker surveyors are licensed by the Maritime and Port Authority of Singapore.



LubeCheck

LubeCheck is an important complementary service to the Maritec Fuel Testing program. Many shipboard machinery problems may not always originate from fuel but could also come from the lubricants. Machinery problems may be caused by incorrect or inappropriate choices or be due to poor quality of the lubricants used. Fuels and lubricants are inter-related and have an importance influence on the performance of the shipboard equipment; hence, should not be tested and reported individually.



ENVIRONMENTAL SERVICES



Ballast Water Analysis

The Ballast Water Management Convention entered into force globally in September 2017 and is a vital treaty adopted to help prevent the spread of potentially harmful aquatic organisms and pathogens in ships' ballast water. We provide commission testing for Ballast Water Management Systems (BWMS) as per International Maritime Organization's (IMO) Ballast Water Convention and BWM.2, Circ.70, Rev.1. We are also able to facilitate Vessel General Permit (VGP) ballast water testing as per United States Coastguard (USCG) requirements.



IHM Preparation and IHM Maintenance

Maintaining a full Inventory of Hazardous Materials (IHM) is essential for minimising health risks to seafarers and to ensure mooring requirements are met. The IHM consists of three parts, all of which we can assist in the implementation and document preparation of, these include: Part I preparation for ship construction, fleet-in-service vessels, Part I, II & III for the vessel recycling plan carried out as per the Hong Kong Convention & Regulation (EU) 1257/2013.



Responsible Recycling Supervision

Ship recycling can often be highly complicated due to the complexities with ship recycling regulations. Our Recycling Supervision team members have considerable experience and familiarity with ship recycling processes practiced by facilities in most major recycling locations. We can assist owners in developing shortlists performing in-depth audits or selecting recycling facilities using comprehensive and constantly updated checklists, in order to determine their ability to comply with recycling regulations in force. Crucially, we can also help determine an owner's specific Environmental and Social Governance (ESG) standards.



Asbestos Surveys & Certification

Most maritime countries have banned both the importing and exporting of asbestos, including ships and/or ships parts with asbestos or asbestos containing material(s). We offer a 'one-stop shop' for asbestos inspection, testing, certification through our inspection body and in-house asbestos lab which is fully accredited by UKAS. This service is for newly constructed vessels, fleet-in-service vessels as per IMO SOLAS regulations or flag state requirements such as those of France, Australia and the Netherlands. We also offer asbestos inspections, as well as asbestos-free certification for office buildings.



Asbestos Management, Removal & Abatement

According to IMO MSC.1/Circ.1374, when asbestos is detected on-board, action should be taken to have it removed and assigned to professional asbestos removal companies such as Maritec. This should take place within a time frame of 3 years from the date when the asbestos is first found. Asbestos removal should be conducted in close consultation with and, where applicable, under the supervision of the Flag State concerned. Asbestos management may be required when asbestos removal is not entirely possible due to the circumstances. We help ship owners carefully select and implement safe asbestos encapsulation, enclosure, encasement, repair or removal procedures.



Hazardous Materials Laboratory Testing

The maritime industry has seen dramatic changes in recent years with the introduction of new legislation and regulations to reduce the industry's environmental impact. This is set to continue as it develops its 'green credentials' and due to the ongoing marine environmental crisis increasing pressure upon companies and organisations to act. Whether you are a shipyard or supplier within the maritime industry or alternatively, a Hazmat consultant/expert working on IHM we can help you navigate this legislation through our comprehensive hazardous materials laboratory testing programme.

Global Office Locations

