M/T "VSLNAME"
IMO No: 9999999

BIOFOULING MANAGEMENT PLAN

Prepared based on the 2023 Guidelines for the Control and Management of Ship's Biofouling (Resolution MEPC.378(80))

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PLAN HISTORY				
REV.	DWN.	CHK.	DESCRIPTION	DATE
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TOTAL XXX SHEETS WITH COVER

CAUTION

TITLE:	BIOFOULING MANAGEMENT PLAN				
HULL NO.:	1111				
IMO NO.:	1111111				
SHIP TYPE:	XXXX				
SHIP NAME:	XXXX				
SIZE:	XXXX	DWG. NO.:	XXXX-01	DATE:	XX.XX.XXXX
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Amendment Record

Amendment Number	Effective Date	Description	Approved by

Distribution List

This document is to be distributed to ship's personnel responsible for ship-to-ship operations. Each holder should sign for having received and read the plan.

Name	Rank	Date Joined	Signature / Date

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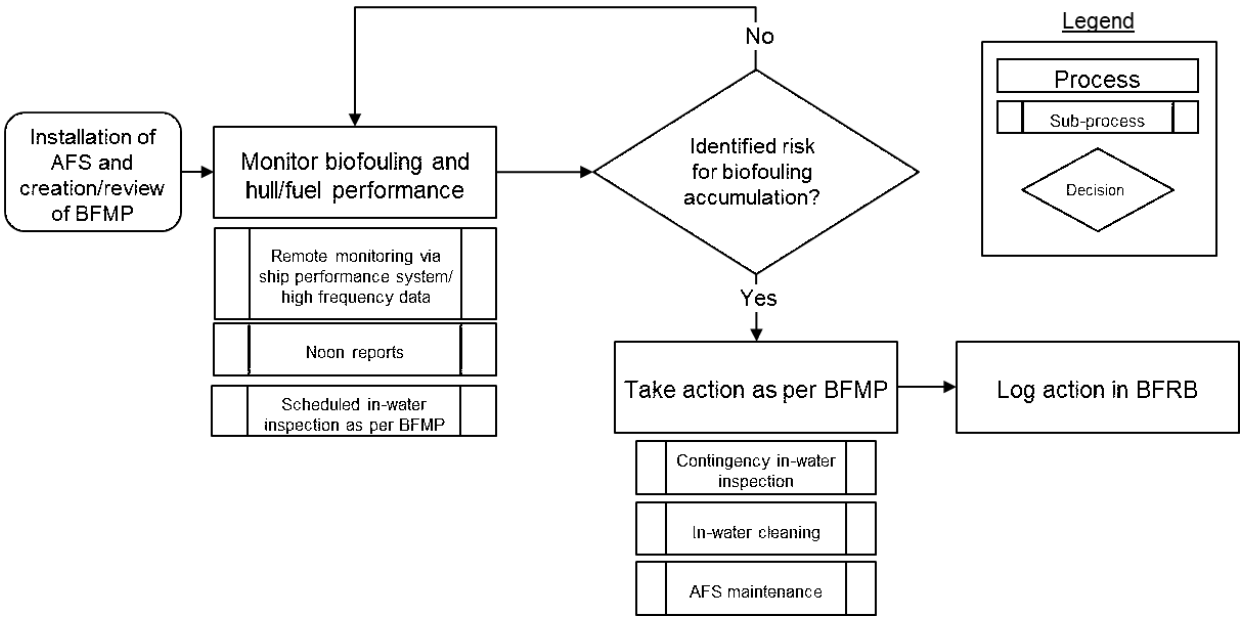
1. INTRODUCTION

1.1. Purpose

This Plan:

1. Has been developed pursuant to the 2023 Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species, Resolution MEPC.378(80), adopted on 7 July 2023, and considering the requirements of:
   - US Ballast Water Management Rule
   - California State
   - Australia, and
   - New Zealand.
2. Describes the biofouling management for the period between two scheduled dry-dockings (which include application, reapplication, installation or renewal of the AFS).
3. Shall be re-evaluated and updated (if required) upon every dry-docking and/or if any changes are made that affect the anticipated biofouling.
4. Provides effective procedures and practical guidance to the Company, the vessel's Master, and any other interested parties, to control and manage the biofouling to minimize the risk of transferring and spreading invasive aquatic species from ships' biofouling. These procedures must be effective as well as environmentally safe, practical and designed to minimize costs and delays to the vessel.
5. The measures outlined herein are intended to complement current maintenance practices



carried out within the Company and follow the simplified flow-chart below:

6. Is to be available for viewing on request by a Port State Authority and is written in English which is the working language of the crew.

1.2. Definitions

Anti-fouling coating system

A surface coating or paint designed to prevent, repel or facilitate the detachment of biofouling from hull and niche areas that are typically or occasionally submerged.

Anti-fouling system (AFS)

A coating, paint, surface treatment, surface, or device that is used on a vessel to control or prevent attachment of organisms.

Anti-fouling System (AFS) Certificate

The International Antifouling System Certificate that ships greater than 400 gross tonnes and registered to a Flag State that is a Party to the AFS Convention, 2001 are required to carry. This certificate indicates that the ship's anti-fouling system complies with the Convention.

Biocide

A chemical substance that is incorporated into anti-fouling coatings to prevent the settlement or survival of aquatic organisms.

Biofouling

Also referred to as hull fouling or marine growth, is the accumulation of aquatic organisms such as micro-organisms, plants, and animals on surfaces and structures immersed in or exposed to the aquatic environment, including, but not limited to, sea chests, propellers, anchors and associated chains, and other niche areas. Biofouling can include microfouling and macrofouling (see below).

Biosecurity

The exclusion, eradication or effective management of pests and diseases that threaten the economy, environment, human health, social and cultural values.

Biosecurity risk

The potential harm to the economy, environment, human health and social and cultural values posed by pests and diseases entering, emerging, establishing or spreading.

Capture

The process of containment, collection and removal of biofouling material and waste substances detached from submerged surfaces during cleaning in water or in dry-dock.

Cleaning system

The equipment used for, or the process of, removal of biofouling from the ship surface, with or without capture.

Dry-dock cleaning

The cleaning of the submerged areas when the ship is out of water.

Fouling rating

The allocation of a number for a defined inspection area of the ship surface based on a visual assessment, including description of biofouling present and percentage of macrofouling coverage, as per the table in Section 6.1.

In-water cleaning

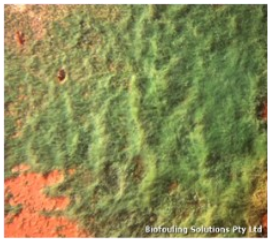
The removal of biofouling from a ship's hull and niche areas while in the water. In-water cleaning includes hull grooming, propeller cleaning or polishing and cleaning of niche areas.

Invasive aquatic species

The non-native species to a particular ecosystem which may pose threats to human, animal and plant life, economic and cultural activities and the aquatic environment.

Macrofouling

Biofouling caused by the attachment and subsequent growth of visible plants and animals on structures and ships exposed to water. Macrofouling is large, distinct multicellular individual or




colonial organisms visible to the human eye such as barnacles, tubeworms, mussels, fronds/filaments of algae, bryozoans, sea squirts and other large attached, encrusting or mobile organisms.

Marine Growth Prevention System (MGPS)

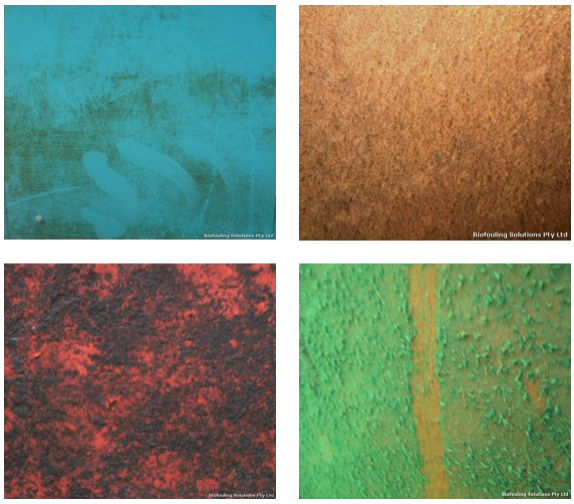
An AFS used for the prevention of biofouling accumulation in niche areas or other surface areas but may also include methods which apply surface treatments.

Member States

States that are Members of the International Maritime Organization.

Microfouling

Biofouling caused by bacteria, fungi, microalgae, protozoans and other microscopic organisms that



creates a biofilm also called a slime layer.

Niche areas

A subset of the submerged surface areas on a ship that may be more susceptible to biofouling than the main hull owing to structural complexity, different or variable hydrodynamic forces, susceptibility to AFC wear or damage, or inadequate or no protection by AFS.

Port State authority

Any official or organization authorized by the Government of a Port State to verify the compliance and enforcement of standards and regulations relevant to the implementation of national and international shipping control measures.

Proactive cleaning

The periodic removal of microfouling on ships' hulls to prevent or minimize attachment of macrofouling.

Reactive cleaning

The corrective action during which biofouling is removed from a ship's hull and niche areas either in water with capture or in dry dock.

Service life

The period of time an anti-fouling coating system is expected to protect a treated surface from biofouling and/or corrosion if the coatings are applied in accordance with the manufacturer’s specifications.

Ship

A vessel of any type whatsoever operating in the aquatic environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft, fixed or floating platforms, floating storage units and floating production storage and off-loading units.

States

Coastal, Port, Flag or Member States, as appropriate.

Waste substances

Dissolved and particulate materials that may be released or produced during cleaning or maintenance, and may include biocides, metals, organic substances, removed biofouling, pigments, microplastics or other contaminants that could have a negative impact on the environment.

1.3. Abbreviations

AFS	Anti-fouling System
AFC	Anti-fouling Coating
BFMP	Biofouling Management Plan
BFRB	Biofouling Record Book
IMO	International Maritime Organization
MGPS	Marine Growth Prevention System

1.4. Ship Particulars

Ship's Name:	**VSLNAME**
Ship's Type:	Crude Oil Carrier
Flag:	Liberia
Port of Registry:	Monrovia
Call Sign:	SYJM
IMO Number:	9999999
Classification:	ClassNK
Gross Tonnage:	35,233
Net Tonnage:	23,244
Built by:	Mitsubishi Heavy Industries Ltd. Nagasaki, Japan
Year Built:	1999

Length O.A.:	321.300 m
Length B.P.:	308.000 m
Breadth (mld.):	57.000 m
Depth (mld.):	29.900 m
Summer Load Draught (extr.):	20.486 m
Deadweight:	180,000 MT

2. DESCRIPTION OF OPERATING PROFILE

The vessel's operating profile considered for the selection of the anti-fouling systems (AFS) and operational practices is described below:

Typical operating speed	11-15 knots
In-service period	220-260 days per year (average)
Typical trading areas	International voyage, excluding Polar Waters
Typical operating areas, including climate zones in which the ship will operate	Temperate, semi-temperate and tropical
Typical salinities of operating areas in which the ship will operate	Fresh water, brackish water and / or marine water
AFS installed are suitable for typical operating profile	Yes ☒ No ☐
Date of most recent scheduled dry-docking	23 September 2021
Date of next scheduled dry-docking	September 2026

3. DESCRIPTION OF HULL AND NICHE AREAS WHERE BIOFOULING MAY ACCUMULATE

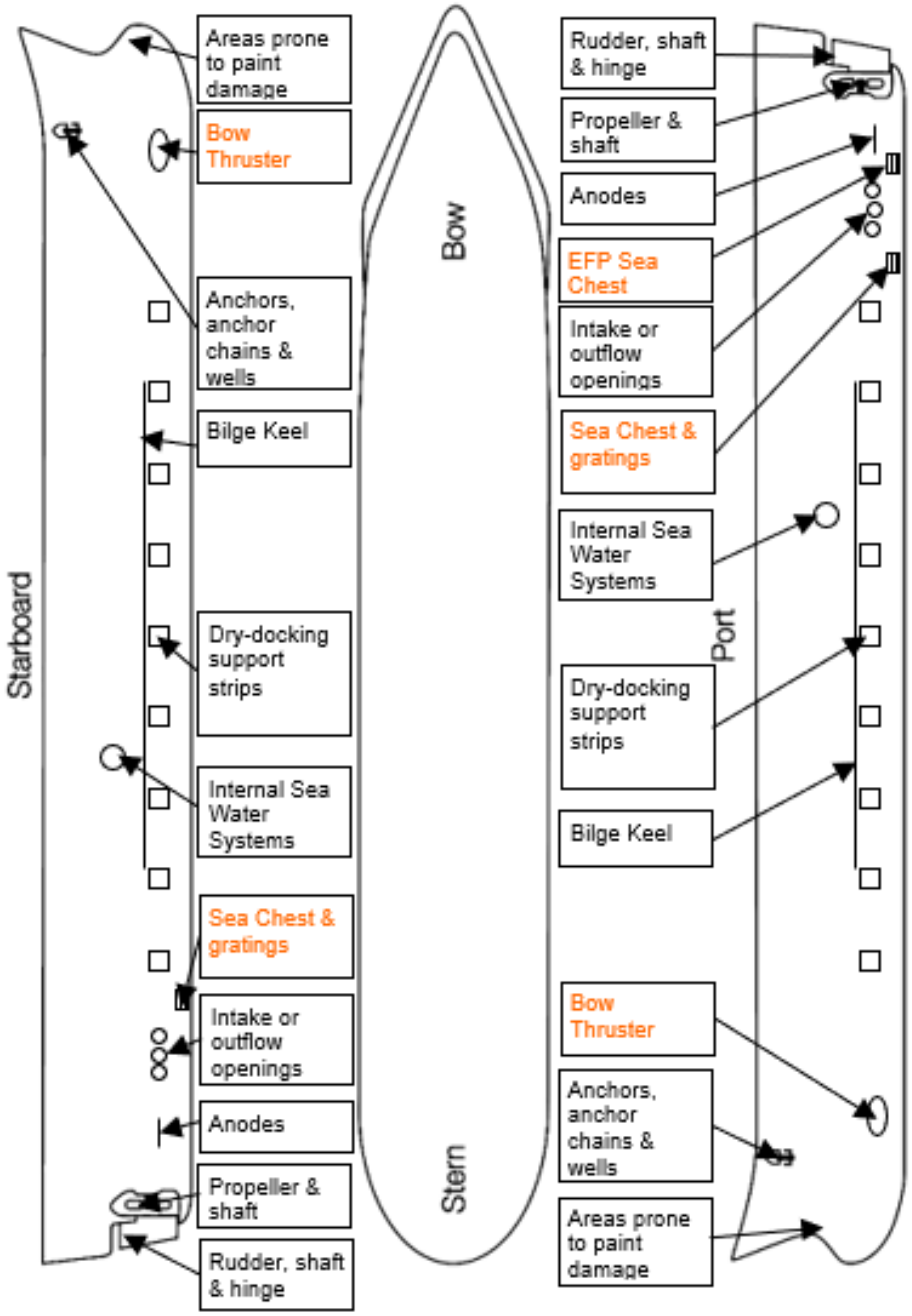
3.1. Vessel's Hull And Niche Areas

The hull and niche areas where biofouling may accumulate are described below.

		Quantity
Areas on hull	Flat-bottom (front / mid / aft)	-
	Boot top	-
	Vertical sides (port / starboard)	-
	Vertical side aft	-
	Transom	-
Niche areas	E/R Sea Chests (High / Low)	2
	Em'cy Fire Pump Sea Chest	1
	Bow dome (sonar dome)	1
	Bow Thruster Tunnel / Tunnel Grates	1
	Cathodic Protection Anodes and Systems	1
	Bilge Keels	2
	Anchor Chain	2
	Chain Locker	2
	Rudder	1
	Dock Block Positions	See Docking Plan
	Stern Tube	1
	Internal Pipework	-
	Ballast Uptake System (Sea Chests)	2
	Inlet Gratings	-
	Sea Inlet Pipes	-
	Propeller / Propeller Shaft	-
	Stern Tube Seal	-
	Echo Sounders	-
	Rope Guards	-
	Engine Cooling System	-
	Fire-Fighting System	-
	Auxiliary Service System	-

3.2. Location Of Areas Where Biofouling May Accumulate on the Ship

The hull areas, niche areas and seawater cooling systems on the vessel that are particularly susceptible to biofouling (including access points in the internal seawater cooling systems) are



identified in the diagram below.

4. DESCRIPTION OF APPLIED ANTI-FOULING SYSTEM

01 Anti-fouling systems and operational practices are the primary means of biofouling prevention and control for existing vessels' submerged surfaces, including the hull and niche areas.

02 An anti-fouling system can be a coating system applied to exposed surfaces, biofouling resistant materials used for piping and other unpainted components, or other innovative measures to control biofouling.

03 Prior to a scheduled dry-docking, make an evaluation of qualitative observations regarding the ship's biofouling with the purpose of a potential improvement of the AFC selection.

04 Previous reports on the performance of the ship's AFC shall be part of the evaluation.

The following anti-fouling systems apply to this ship:

4.1. Anti-Fouling Coating (Afc)

Details for the selected AFC, that is applied, reapplied, installed or renewed on the ship, are set out below:

Details of the most recent dry-docking			
Date (Day/Month/Year):		23 September 2021	
Port or Position:	Dubai Drydocks	Country:	UAE

Anti-Fouling Coating (AFC)	
Manufacturer	
Type	Hard coating, self-polishing or fouling release
Product Name	
Biocides	Copper oxide
Dry film thickness	
Locations applied	
Expected lifetime	5 years
Operating profiles which are suitable for the AFC including temperature, salinity, speed, periods of inactivity	Operating profile: Unrestricted navigation Maximum idle time: 120 days
Recommended regime for repairs, maintenance and/or renewal to receive the AFC optimal performance	Renewal at dry-dock
Cleaning methods recommended for AFC	Certified divers with cleaning equipment
Cleaning methods not appropriate for AFC, if any	N/A
IAFS Certificate	See Appendix V

4.2. Installation Of Anti-Fouling System

The areas on the ship which are protected with the selected AFS are described below:

AFS type applied	Areas on ship where AFS is applied	Date of application	Recommended cleaning technique
AFC (A)	Flat-bottom- front /mid/ aft, bow dome, boot top, vertical sides (port / stbd side), vertical side – aft, transom, or others		Soft brush, blades, metal brushes or water jet
AFC (B)	Flat-bottom- front /mid/ aft, bow dome, boot top, vertical sides (port / stbd side), vertical side – aft, transom, or others		Soft brush, blades, metal brushes or water jet
Other AFS			
No AFS			

5. INSPECTION OF HULL AND NICHE AREAS

5.1. Initial and Subsequent Inspection

Carry out inspections:

1. To determine the type and level of biofouling.
2. To observe the AFS and AFC condition on the hull and in niche areas.
3. To check the niche areas listed in the current Plan. Allocate all inspected areas a fouling rating number in line with the table below:

Rating scale to assess the extent of fouling on inspection areas

Rating	Description	Macrofouling cover of area inspected (visual estimate)	Recommended cleaning
0	**No fouling** Surface entirely clean. No visible biofouling on surfaces.	-	-
1	**Microfouling** Submerged areas partially or entirely covered in micro-fouling. Metal and painted surface may be visible beneath the fouling.	-	Proactive cleaning may be recommended as further specified in Section 7.1.
2	**Light macrofouling** Presence of microfouling and multiple macrofouling patches. Fouling species cannot be easily wiped off by hand.	1-15% of surface	Cleaning with capture is recommended as further specified in Section 7.2. It is recommended to shorten the interval until the next inspection. If the AFS is significantly deteriorated, dry-docking with maintenance and reapplication of the AFS is recommended.
3	**Medium macrofouling** Presence of microfouling and multiple macrofouling patches.	16-40% of surface	
4	**Heavy macrofouling** Large patches or submerged areas entirely covered in macrofouling.	41-100% of surface	

4. As fixed schedule inspections, by inspection organizations or personnel able to provide impartial inspection.
5. As contingency actions, by organizations, crew or personnel competent for such inspections.
6. If AFS is not performing effectively soon after application, reapplication, installation or renewal (e.g. increased fuel consumption) to ensure the AFS condition and the biofouling's level as soon as practical or possible, in line with the BFMP and contingency action plan.

The frequency of inspection dates (or date ranges) for in-water inspections shall be based on vessel's biofouling risk profile as per table below:

Inspection areas	Initial inspection	Subsequent inspections
Areas installed with AFS and operating within the profile	Inspection within 12 months (for vessels not conducted). In case performance monitoring indicates adequate performance of the AFS (i.e. speed loss between 1% and 3% or increased fuel consumption of 3-9%), an inspection will be conducted within 18 months. If the monitoring indicates that the AFS is not performing effectively (speed loss >3% or fuel consumption increase by >9% - examples taken from ISO 19030-2:2016), an inspection shall be carried out as soon as possible. If performance monitoring has not been conducted during the first inspection date, it shall be carried out within 12 months of application, reapplication, installation or renewal of AFS to confirm their effective operation.	If fouling rating 0-1 in previous inspection, then inspection every 12-18 months If fouling rating 2, 3 or 4 in previous inspection, then more frequent inspections (e.g. every 6-12 months)
Areas with no AFS and no other measures (such as in-water cleaning or propeller polishing)	Inspection within 12 months	Inspection more frequent
Areas with no AFS and no other measures (such as in-water cleaning or propeller polishing)	N/A, AFS is fully applied till Load Line	

In-water, inspections:

1. Seek to coincide with existing subsea operations (e.g. underwater inspections in lieu of dry-dock or any other in-water inspections), including any unscheduled subsea operations.
2. Assess biofouling across the entirety of a ship's hull and niche areas.
3. Determine the level of biofouling of the hull and niche areas and the condition of the AFS.
4. Record the relevant results of these inspections in the Inspection Report (Appendix III) which must be available onboard and listed/linked in the BFRB (Appendix II).

5.2. Inspection During Dry-Docking

1. Inspect the condition of the AFC during dry-docking and apply TBT-free/organotin-free paints as necessary.
2. The vessel is surveyed by the Classification Society and such survey is endorsed on the International Antifouling System Certificate.
3. Keep the following records of any antifouling paint applied to the vessel:
   - Dates of paint application

- Materials used
- Application process, etc.

4. Positions of dry-docking blocks and supports shall be varied at each dry-docking, or alternative arrangements made to ensure that areas under blocks are painted with anti-fouling at least at alternate dry-dockings. These areas shall receive a major refurbishment type of surface preparation and be coated at each dry-docking so that they are accessible.
5. Where it is not possible to alternate the position of dry-docking support strips, e.g. in critical weight bearing areas such as under the Engine Room, these areas shall be specially considered and managed by other means, e.g. by application of specialized coatings or procedures.
6. Keep a copy of the vessel's docking plan from the 2 most recent dry-dockings in Appendix V.
7. Record the relevant results of these inspections in the Inspection Report (Appendix III) which must be available onboard and listed/linked in the BFRB (Appendix II).

6. CLEANING

Cleaning is an important measure to remove biofouling from the hull and niche areas, but may physically damage the AFC, shorten coating service lifetime and release harmful waste substances and invasive aquatic species into the environment.

Comprehensive testing of cleaning systems or processes is necessary to:

1. Understand the cleaning performance.
2. Capture efficiency or any release of harmful waste substances.
3. Improve knowledge concerning the prevention of release of viable fragments, spores and other parts of biofouling organisms that have the potential to be invasive.

6.1. Procedures For Proactive Cleaning

1. Proactive cleaning is the periodic removal of microfouling on hull and niche areas or other submerged surfaces as relevant prior to macrofouling growth.
2. Proactive cleaning without capture must:
   - NOT be conducted on biofouling with rating ≥2.
   - Be performed in an area accepted by the relevant authority for this activity.
   - Be conducted with or without capture.
   - Be conducted in accordance with the local regulations or requirements regarding biofouling and waste substances discharge and as per AFS manufacturer's recommendations.
3. Record any proactive cleaning, and determination of biofouling level prior to the cleaning, in the BFRB (Appendix II).

Description of proactive cleaning activities which are planned on a regular basis, if any, are listed below.

Proactive cleaning method(s)	Areas where cleaning method will be applied	Operating condition when cleaning method will be applied	Cleaning schedule
Sailing at speed for a few hours	Flat-bottom fore, mid & aft, bow dome, boot top, vertical sides	In open sea, on voyage	When recommended based on monitoring of biofouling parameters
ROV with water jet, ROV with soft brush, manual device with soft brush or other	Flat-bottom fore, mid & aft, bow dome, boot top, vertical sides, transom	Moored in harbor, drifting in open sea, on anchorage in coastal waters, on voyage	When recommended based on monitoring of biofouling parameters. In case of unforeseen biofouling levels defined as fouling rating 1 are detected on hull or in niche areas
Possible harmful discharge from cleaning with proactive cleaning method		AFC biocides, biofouling, particles or other	
Manufacturer and model of ship-specific proactive cleaning device, if applicable			
Proactive cleaning method suitable for AFC		Sailing, ROV/divers with soft brush	

Required maintenance and frequency, as applicable	Depending on performance monitoring system, but in any case, not more than every 12-18 months
Proactive cleaning suitable for typical operating profile, i.e. is the ship expected to stay enough time in locations where proactive cleaning can be carried out	Yes
Description of how to avoid biofouling cleaning and discharge of macrofouling, if possible	
Proactive cleaning device tested in line with applicable standard	

6.2. Procedures for Reactive Cleaning

1. Reactive cleaning systems physically remove micro- and macrofouling from the hull and niche areas.
2. Perform reactive cleaning as a result of any inspection with a fouling rating ≥2.
3. The reactive cleaning must use a reactive cleaning system compatible with the AFC and be conducted:
   - Based on the relevant inspection results and contingency actions as outlined to the current Plan.
   - In accordance with any local regulation or requirement regarding biofouling and waste substances discharge.
   - In line with procedures of the ship cleaning operator or the dry-dock facilities used.
   - To achieve a fouling rating ≤1 for the cleaned area.
   - To strive for effective collection and safe disposal of all biofouling material and waste substances when reactive cleaning is performed in water or at dry dock.
   - In an area accepted by the relevant authority for this activity.
4. Biofouling management in niche areas must include the following or similar adequate measures:
   - Regular polishing (with capture of debris) of uncoated propellers to maintain operational efficiency and minimize macrofouling accumulation.
   - Appropriate treatment of internal seawater cooling systems and discharge of any treated water in accordance with applicable regulations; and
   - Minimizing the use of any soap, cleaner or detergent used on surfaces and ensuring they are toxic- and phosphate-free, biodegradable and non-hazardous to the marine environment.
5. Captured biological waste and waste substances must be disposed of and treated in a safe and environmentally sound manner, in accordance with local requirements.
6. Record the results of this cleaning in the Cleaning Report (Appendix III) which must be available onboard.
7. Make also a relevant entry in the BFRB (Appendix II).

Preferred cleaning methods and procedures that can be used are described below:

Reactive cleaning method(s)	Areas where cleaning method will be applied	Operating condition when cleaning method will be applied	Cleaning schedule
Water jet and suction with capture in line with applicable standard	Flat-bottom fore, mid & aft, bow dome, boot top, vertical sides, transom	Moored in harbor, drifting in open sea, on anchorage in coastal waters, on voyage	When recommended based on monitoring of biofouling parameters and/or in case unforeseen biofouling levels are detected on hull or in niche areas
Steaming with capture performed in line with applicable standard	Sea chests, internal pipework, ballast uptake system, inlet gratings	In dry-dock	When recommended based on monitoring of biofouling parameters

			and/or in case unforeseen biofouling levels are detected in niche areas
Possible harmful discharge from cleaning with reactive cleaning method		AFC biocides, biofouling, particles or other	
Manufacturer and model of ship-specific reactive cleaning device, if applicable		N/A	
Reactive cleaning method suitable for AFC			
Required maintenance and frequency, as applicable		Depending on assessment of biofouling risk parameters, see Section 8	
Reactive cleaning suitable for typical operating profile, i.e. is the ship expected to stay enough time in locations where reactive cleaning can be carried out		Yes	
Reactive cleaning device tested in line with applicable standard			

7. MONITORING OF BIOFOULING RISK PARAMETERS AND CONTINGENCY ACTIONS

Relevant digital tools applied for monitoring of biofouling risk parameters and/or digitalized real-data input are as follows:

- Daily Noon Reports
- Monthly Hull Performance Reports
- Monitoring of speed loss/fuel consumption as per performance monitoring system.

Monitor the biofouling risk parameters given below when the ship is in operation. When a parameter goes beyond the deviation limit, the risk of biofouling is increased, and the recommended contingency actions must be used as described.

Biofouling risk parameters to monitor	Evaluation of a deviation including deviation limit of the risk parameter	Contingency actions	Long-term actions
Deviation from speed specifications acceptable for the AFS	Incidental deviations must be evaluated for potential biofouling impact. Continuous or regular deviations, or deviations not rectified, must lead to contingency actions.	Shorter inspection interval with inspection every 4 months. When recommended by the AFS manufacturer, more frequent proactive cleaning activities could be implemented between inspections.	Evaluate the need for a potential improvement of the AFS selection prior to the next dry-docking.
Deviation from salinity specifications acceptable for the AFS			
Deviation from temperature range specifications acceptable for the AFS			
Deviation from the maintenance / service regime of the AFC	If the maintenance and service time, specified by the manufacturer, is exceeded, the risk of biofouling is elevated, and contingency actions must be implemented.	Carry out an inspection for the relevant area. Perform maintenance or repair at earliest possible opportunity.	Regular maintenance and repair may be necessary actions for proper protection by the AFC. Evaluate the need to update maintenance program.
AFC damage	Failure caused by mechanical damage to the AFC may result in higher risk of biofouling in the areas affected, if not rectified within reasonable time.	AFC repair	Consider replacing the AFC when opportunity arises.
Exceeding expected lifetime of AFS	Once an AFS has exceeded its lifetime, as specified by the manufacturer, the biofouling risk is increased.	Implement more frequent inspections until the AFS is back in operation.	Include in the next update of this BFMP the performance of the AFS, and any necessary change in maintenance or inspection schedule, based on experience.
Deviation from regular proactive cleaning	When proactive cleaning is implemented as part of the AFS, deviation from regular use could lead to	Carry out an inspection. If there is macrofouling (fouling rating ≥2) in the	Regular maintenance and repair may be necessary actions for proper protection by the

Biofouling risk parameters to monitor	Evaluation of a deviation including deviation limit of the risk parameter	Contingency actions	Long-term actions
	increased risk of biofouling growth onto relevant submerged areas.	relevant area, perform reactive cleaning with capture before proactive cleaning is used again. Perform maintenance or repair at earliest possible opportunity. Implement more frequent inspections until the missing proactive cleaning is in regular use.	proactive cleaning. Evaluate the need to update maintenance program.
Deviation from necessary reactive cleaning.	If reactive cleaning is not conducted as scheduled or after an inspection has determined that reactive cleaning is necessary, it will increase the risk of spreading organisms to new locations.	Prior to departure, perform reactive cleaning, to avoid risk of spreading invasive aquatic species. If no reactive cleaning is performed prior to departure, schedule a reactive cleaning activity at earliest possible opportunity. If no reactive cleaning is performed, an acceptance could be required to arrive in the next Port. Contact next Port for further advice.	More frequent reactive cleaning may be necessary actions for proper biofouling management. Evaluate the need to update the cleaning schedule.
Extended ship idle time (berthed, anchored, moored)	If the idle time is longer than estimated in the ship's operating profile, it could lead to an elevated risk of biofouling. If the idle time is beyond the guarantee of the AFS supplier, the risk of biofouling accumulation increases. The risk also depends on biofouling pressure, e.g. temperature and distance to the coastline. If the ship is idle in an area far from shore (>200 nm and >200 m depth) and far from other installations, the risk may still be	If the idle time is within the guarantee of the AFS supplier: • Conduct a short voyage with speed as specified for the AFS. • Blank off sea chests. • When recommended by the AFS manufacturer, implement more frequent proactive cleaning activities. If the idle time is beyond the guarantee of the AFS supplier, carry out an inspection.	Evaluate the need for a potential improvement of the AFS selection prior to the next dry-docking.

Biofouling risk parameters to monitor	Evaluation of a deviation including deviation limit of the risk parameter	Contingency actions	Long-term actions
	considered low.		
Performance loss as per Performance Monitoring System	Performance monitoring may detect biofouling growth on the hull, but not necessarily in niche areas. • Sensors and collecting high-frequency data • Semi-automatic or manual calculations using data collected from ship's crew (e.g. noon reports). • Speed trials and comparing the performance data with previous speed trial reports. Percentage of the speed loss and percentage of increased fuel consumption, that may indicate light biofouling on the ship	When the data show a trend in performance loss over time, evaluate the time since last cleaning activity in combination with operating profile to determine if an inspection shall be carried out.	Experience from fuel consumption and cleaning activity over time may lead to optimization and changes to the cleaning schedule.
Downtime/ malfunction of proactive cleaning	When proactive cleaning is implemented as part of the AFS, long periods of downtime could lead to increased risk of biofouling growth.	Implement more frequent inspections of relevant areas until the proactive cleaning is back in operation. Perform maintenance or repair at earliest possible opportunity. If macrofouling accumulation is found (fouling rating≥2), conduct reactive cleaning with capture before the proactive cleaning is put into service again.	Regular maintenance and repair (e.g.) may be necessary actions for proper protection by the proactive cleaning. Evaluate the need to update maintenance program.

8. CAPTURE AND DISPOSAL OF WASTE

The in-water reactive cleaning company shall capture any debris during cleaning. The biofouling waste shall be disposed of and/or treated in a safe and environmentally sound manner and considering local regulations, to ensure the transfer of invasive aquatic species is minimised.

Keep the relevant receipt of collection/delivery of the wastes onboard with the BFRB (Appendix II).

9. SAFETY PROCEDURES FOR THE SHIP AND CREW

1. During the implementation of the biofouling management procedures outlined in this Plan, strictly implement all applicable safety procedures contained in the Company's Safety Management System (SMS).
2. Implement the safety measures mandated as per the manufacturer's recommendations for the various anti-fouling systems installed as part of the ship's routine and follow the best safety practices during operation, inspection and maintenance.
3. Give particular attention to the safety procedures for:
   - Divers' underwater inspection and repairs, for the in-water hull inspections and cleanings
   - Entry into enclosed spaces, for the inspection of chain locker.
4. To avoid the creation of avoidable niches while ensuring effective safety and operation of the ship, where practical, give particular attention to any unfilled gaps in all skin fittings and the detailed design of the following items:
   - Sea chests: Minimise size and number, and use smooth surfaces to maximize flow efficiency, and steam or hot water cleaning systems, grills and their opening arrangements designed for in-water inspection and maintenance.
   - Retractable fittings and equipment: Avoid external reinforcement (such as stiffeners) where possible, design for in-water inspection and maintenance.
   - Tunnel thrusters – tunnels: To be above light water line or accessible to divers, grills and their opening arrangements designed for in-water inspection, maintenance and operation.
   - Sponsons and hull blisters: Use fully enclosed in preference to free flooding types, with access provisions made for in-water inspection, cleaning and maintenance.
   - Stern tube seal assemblies and rope guards: Design for in-water inspection, cleaning and maintenance.
   - Immersible and seabed equipment: Ensure facilities for equipment washdown during retrieval and enclosed wash-down areas for cleaning of equipment onboard, if necessary, are provided.
5. The following table provides a non-exhaustive list of possible areas with associated risks and the precautions to be taken by the ship's crew.

Item	Associated With	Associated Hazard	Mitigation Measures
In-water cleaning	Cleaning crew Cleaning equipment	Propeller turning during maintenance on the main engine or steering movement causing likelihood of injury to cleaning workers and probable damage to cleaning equipment.	Lock-out & Tag-out Prohibiting propeller and rudder movement, logged in the ships log.
In-water cleaning	Cleaning crew	Near misses, injury to non-certified cleaning crew.	The use of qualified underwater cleaning companies with

			experienced and certified workers.
In-water cleaning	Cleaning crew Cleaning equipment	Main sea suctions & discharges in operation causing ingestion of biofouling matter into the sea water piping or full flow discharges of the main sea water system on cleaning crew attending to main sea chests, boiler blow down shipside outlet.	Lock-out & Tag-out Prohibiting opening or closing of relevant valves without the permission of a ship's responsible Officer.

Diver and remotely operated vehicle (ROV) surveys must be undertaken by people who are suitably qualified, experienced and familiar with biofouling and associated invasive aquatic species risks and the safety risks relating to in-water surveys. Regulatory Authorities may have recommended or accredited biofouling inspection divers.

10. CREW TRAINING AND FAMILIARIZATION

Master:

1. You and the crew must have a good understanding of the need for biofouling cleaning and management to minimize the risk of transferring invasive aquatic species from vessels' biofouling and of the measures that have to be implemented onboard in accordance with this Plan.
2. Therefore, as part of your onboard familiarization process with the Company's procedures, review this Plan and become familiar with its provisions.
3. As part of the onboard training program, organize ad-hoc training sessions with the participation of all the crew to raise awareness on the need for biofouling management.
4. Provide instructions based on the following:
   - Maintenance of appropriate records and logs (see Section 12)
   - Impacts of invasive aquatic species from vessels' biofouling (see Section 1)
   - Benefits to the vessel of managing biofouling and the threats posed by not applying management procedures
   - Relevant health and safety issues
   - Cleaning and inspection (see Sections 6 & 7)
   - Monitoring the biofouling risk parameters and contingency actions (see Section 8 & Appendix I)
   - Capture and disposal waste (see Section 9)
   - Associated safety procedures (see Section 10)
   - National and local regulations for reporting the biofouling measures in place (see Appendix IV)
5. Ensure that:
   - Inspections are carried out by crew as part of contingency actions.
   - Crew onboard is familiarized on the procedures and biofouling management actions contained in this Plan.
   - Records are kept using the relevant SMS Form.

11. RECORDING REQUIREMENTS

11.1. Inspection and Cleaning Reports

1. Prepare a report after an inspection and/or cleaning operation according to the samples provided in Appendix III. The report must:
   - Describe the biofouling management actions undertaken on the ship.
   - Be completed upon an inspection carried out by ship's crew as part of contingency actions.
   - Be prepared by the inspection provider.
   - Whilst, the cleaning report shall be prepared by either the cleaning operators or the inspection provider as part of a combined cleaning and inspection report.
2. Record the conclusions from the reports in the BFRB (Appendix II) including reference to the detailed report/assessment.

11.2. Biofouling Record Book

Record the following in this book:

1. Details of repair and maintenance to the AFS including date, location and areas of the ship affected, the percentage of the ship that was recoated with AFC
2. The initial and final date, duration in hours/days and location of in-water inspections, including the inspection report
3. The initial and final date, duration in hours/days and location of cleaning (in water or in dry dock), including a cleaning report
4. Details of when the ship has been operating outside its normal operating profile including any details of when the ship was laid up or inactive for extended periods of time
5. Details of relevant performance monitoring parameters used to determine inspection intervals
6. A copy of the cleaning report, if applicable
7. Description of contingency actions taken, including date, time and location.

More detailed guidelines are provided in Appendix II. It is split into two Parts as follows and must be retained on the vessel for inspection for the life of the vessel:

01 Part I: To record relevant biofouling activities such as inspections, maintenance and cleaning activities.

02 Part II: To record when the ship has a higher risk of biofouling accumulation and related contingency actions.

APPENDIX I – ASSESSMENT OF BIOFOULING RISK

8. A ship-specific assessment has been prepared, based on the possibility for biofouling accumulation. The risk profile indicates the possibility of accumulating biofouling and increases as a function of biofouling pressure versus biofouling protection over time.
9. Monitor the biofouling risk parameters given below as the risk of biofouling accumulation may increase over time.
10. When higher risk is identified, perform recommended actions in the form of inspection, reactive cleaning and/or maintenance of AFS as described in the BFMP.
11. Inspection as a contingency action, if completed by an inspection organization in line with Section 6, can be treated as a starting point to define the interval for the next inspection

Risk Management	
Operation / Work activity being assessed:	Biofouling Accumulation
	☐ Routine ☒ Non-routine
Generated by: Ship ☐ (record the name)	☒Office

Frequency Category		
5	Frequent - Possibility of repeated incidents	More often than once per voyage
4	Probable - Possibility of isolated incidents	Once per year
3	Occasional - Possibility of occurring sometime	Once per 5 years
2	Remote - Not likely to occur	Once per 10 years
1	Very unlikely - Practically impossible	Once per 30 years or more

Consequence Category				
Severi	**Personnel Health / Safety**	**Environmental Impact**	**Assets**	**Reputation / Public Disruption**
4	Human losses / fatalities	Major pollution / Full scale response	Excessive/ high-cost damage >$1,000,000	Major national & international impact
3	Serious injury to personnel	Moderate pollution / Significant resources commitment	Moderate cost or damage ($100,000 – 1,000,000)	Considerable impact
2	Number of minor injuries / Medical treatment for personnel	Little pollution / Limited response of short duration	Little cost or damage ($10,000 – 100,000)	Slight impact

1	Few minor injuries	Minimum pollution / Little or no response needed	Minimum cost / damage < $10,000	Zero impact

Risk Matrix						
FREQUENCY						
		1	2	3	4	5
CONSE-QUENCE	1	L(1)	L(2)	L(3)	M(4)	M(5)
	2	L(2)	M(4)	M(6)	M(8)	H(10)
	3	L(3)	M(6)	M(9)	H(12)	H(15)
	4	M(4)	M(8)	H(12)	H(16)	H(20)

High=Intolerable Risk **Medium**=Tolerable Risk **Low**=Negligible Risk

Risk Assessment						
	Risk Identification		Risk Analysis	Initial risk evaluation		
No	Hazard	Potential hazardous event	Existing control measures	F	C	R
1	Deviation from AFS specifications	Deterioration of AFS, biofouling accumulation	• Manufacturer's specification on AFS/AFC operating parameters and relevant acceptable ranges • BFMP procedures • Crew familiarization with BFMP	2	3	6
2	Deviation from AFS maintenance / service regime		• Manufacturer's instructions for maintenance / service time • BFMP procedures for maintenance • Crew familiarization with BFMP	3	3	9
3	Deviation from regular proactive cleaning or necessary			3	3	9

Risk Assessment						
	Risk Identification		Risk Analysis	Initial risk evaluation		
No	Hazard	Potential hazardous event	Existing control measures	F	C	R
	reactive cleaning					
4	Extended ship idle time		• Acceptable idle time specified within BFMP • Charter Party-defined acceptable idle time • Company's instructions for short periods in Port/at anchorage • Verification that idle time does not exceed acceptable timeframe specified within AFS supplier's guarantee • Consider anchored area where idling will take place to be far from shore (>200nm and >200m depth)	2	4	**8**
5	AFS damage		• Manufacturer's instructions for maintenance/service time • BFMP procedures for maintenance • Crew familiarization with BFMP	2	5	**10**
6	Proactive cleaning or other AFS			2	4	**8**
7	Exceeded expected lifetime of AFS			3	3	**9**
8	Biofouling accumulation	Speed loss/fuel consumption increase	• Semi-automatic or manual calculations using data collected	3	2	**6**

Risk Assessment						
	Risk Identification		Risk Analysis	Initial risk evaluation		
No	Hazard	Potential hazardous event	Existing control measures	F	C	R
			by ship's crew (e.g., noon reports) • Speed trials and comparing the performance data with previous speed trial reports • Sensors and collecting high frequency data (if applicable) • Crew familiarization with BFMP			
Note F: Frequency, C: Consequence, R: Risk						

Risk Treatment				Residual risk evaluation		
Hazard No.	Additional Risk Control Measures	Responsible	Action Timeline	F	C	R
1.	Agree approaching procedures with the other ship / mooring master / pilots and monitor implementation. Abort / suspend manoeuvring operation if deviation from what has been agreed is observed or if in doubt or if conditions have changed.	Master	Until next dry-dock	1	3	**3**
2,3,6.	A. Calculation of expected downtime period and evaluation of potential impact	Master, C/E	When downtime is expected	1	2	**2**
	B. Evaluation of downtime period impact to niche areas					
	C. Reactive cleaning at first available opportunity if fouling rating ≥1		Before next voyage	1	2	**2**

Risk Treatment				Residual risk evaluation		
Hazard No.	**Additional Risk Control Measures**	**Responsible**	**Action Timeline**	**F**	**C**	**R**
4,8.	Reactive cleaning at first available opportunity	Superintendent, Master	Before next voyage	1	3	**3**
7.	Inspect every 1-2 months	Master, C/E	Until AFS is replaced	1	3	**3**
	Reactive cleaning at first available opportunity if fouling rating ≥1	Master, C/E	Before next voyage	1	2	**2**
5.	Repair / Replacement of AFS	Superintendent	During dry-docking	1	3	**3**

APPENDIX II – EXAMPLE FORM OF BIOFOULING RECORD BOOK

BIOFOULING RECORD BOOK

PART I – BIOFOULING MANAGEMENT ACTIVITIES

Page 1 of ____

Name of ship: VSLNAME

IMO Number: 9999999

Gross Tonnage: 31254

Period From: ..... **To:** .....

Note:

- Biofouling Record Book Part I must be provided to every ship with a Biofouling Management Plan (BFMP).
- Record relevant biofouling activities such as inspections, maintenance and cleaning activities.

1. Introduction

The following pages of this section show a comprehensive list of items of biofouling management activities which are, when appropriate, to be recorded in Biofouling Record Book Part I.

Management of biofouling must be in line with an approved Biofouling Management Plan (BFMP) and take into account guidelines developed by the Organization. The items have been grouped into operational sections, each of which is denoted by a letter code.

When making entries in Biofouling Record Book Part I:

- Insert the date, operational code and item number in the appropriate columns.
- Record the required particulars in the blank spaces.
- **Officer(s) in charge:** Sign and date each completed operation.
- **Master:** Sign each completed page.

The use of an electronic record book to record activities is an alternative method to a hard copy record book.

- Encourage electronic recording and reporting as it may have many benefits and may allow ships to utilize their technology to reduce administrative burdens and contribute to onboard environmental initiatives, e.g. reduction of paper use.
- In case electronic recording is to be used, use Resolution MEPC.312(74) for guidance.

Biofouling Record Book Part I contains many references to observations regarding fouling rating. These observations may be included in separate reports including observations of subsections and corresponding photos/video.

The entries in Biofouling Record Book Part I may be a summary only including a conclusion on whether the activity is in line with the BFMP.

- Keep Biofouling Record Book Part onboard in a place where it is readily available for inspection at all reasonable times and for the life of the ship.
- Perform any inspection of Biofouling Record Book Part I as expeditiously as possible without causing the ship to be unduly delayed.

BIOFOULING RECORD BOOK

PART I – BIOFOULING MANAGEMENT ACTIVITIES

Entries in the Biofouling Record Book Part I

Record the following information:

(A) Proactive cleaning

1. Date and location of ship when proactive cleaning occurred.
2. General observations with regard to biofouling prior to cleaning, if any (i.e. extent of microfouling and macrofouling in line with the defined ratings).
3. Records of permits required to undertake in-water proactive cleaning, if applicable.
4. Details of hull and niche areas cleaned.
5. General observations with regard to biofouling after the cleaning, if any (i.e. extent of microfouling and macrofouling in line with the defined ratings).
6. Reference to any supporting evidence/reports of the cleaning (e.g. report from supplier, photographs/videos and/or receipts), if any.
7. Method, manufacturer and model of proactive cleaning method used, if not given in BFMP.
8. Reference to test standard for which the method has been tested, if not given in BFMP.
9. Name, position and signature of the person in charge of the activity.

(B) Inspection

1. Date and location of inspection.
2. Methods used for inspection (including inspection tools/devices).
3. Areas inspected of the ship.
4. Observations with regard to biofouling (extent of microfouling and macrofouling in line with the defined fouling rates).
5. Observations with regard to anti-fouling system (AFS) condition.
6. Reference to any supporting evidence/reports of the inspection.
7. Name, position and signature of the person in charge of the activity.

(C) Reactive cleaning

1. Date and location of ship when cleaning occurred.

2. Records of permits required to undertake in-water cleaning, if applicable.
3. Description of hull and niche areas cleaned.
4. Methods of reactive cleaning used.
5. Estimation of overall biofouling after cleaning in line with the defined fouling rates.
6. Reference to any supporting evidence/reports of the activity.
7. Receipt or other documenting evidence of collection/delivery of the wastes.
8. Name, position and signature of the person in charge of the activity.
9. Manufacturer and model of cleaning and capture device as well as cleaning company executing the cleaning.
10. Reference to test standard for which the method has been tested, if relevant.

(D) Additional operational procedures and general remark

BIOFOULING RECORD BOOK

PART I – BIOFOULING MANAGEMENT ACTIVITIES

Page 5 of ____

Name of ship: VSLNAME

IMO Number: 9999999

BIOFOULING MANAGEMENT ACTIVITIES

Date	Code (letter)	Item (number)	Record of activity/ Signature of Officer in charge

Signature of Master _____

BIOFOULING RECORD BOOK

PART II – MONITORING OF BIOFOULING RISK PARAMETERS

Page 1 of ____

Name of ship: VSLNAME

IMO Number: 9999999

Gross Tonnage: 31254

Period From: ..... **To:** .....

Note:

- Biofouling Record Book Part II must be provided to every ship with a Biofouling Management Plan to record when the ship is at higher risk of biofouling accumulation given by monitoring of biofouling risk parameters.
- Record relevant contingency actions.

1. Introduction

The following pages of this section show a comprehensive list of risk parameters to be monitored and recorded in Biofouling Record Book Part II whenever the risk is increased according to the BFMP. The items have been grouped into sections, each of which is denoted by a letter code.

- When making entries in Biofouling Record Book Part II, insert the date, code and item number in the appropriate columns.
- Record the required particulars chronologically in the blank spaces.
- **Officer(s) in charge:** Sign and date each completed operation.
- **Master:** Sign each completed page.

The use of an electronic record book to record when the ship is subject to higher risk of biofouling accumulation is an alternative method to a hard copy record book.

- Encourage electronic recording and reporting must be encouraged as it may have many benefits and may allow ships to utilize technology to monitor the risk parameters as defined in the BFMP. This may reduce administrative burdens and contribute to better surveillance of potential risk.
- In case electronic recording is to be used whenever the ship has higher risk, use Resolution MEPC.312(74) for guidance.

Biofouling Record Book Part II may contain many references to contingency actions.

- When actions include inspection, maintenance and/or cleaning, record these in Biofouling Record Book Part I.
- Keep Biofouling Record Book Part II onboard in a place where it is readily available for inspection at all reasonable times and for the life of the ship.
- Perform any inspection of Biofouling Record Book Part II as expeditiously as possible without causing the ship to be unduly delayed.

BIOFOULING RECORD BOOK

PART II – MONITORING OF BIOFOULING RISK PARAMETERS

Page 2 of ____

Entries in the Biofouling Record Book Part II

Record the following information:

(A) When the ship operates outside the expected operating profile specified in the BFMP (e.g. speed, temperature or salinity)

1. Duration and dates when ship is not operating in line with its BFMP.
2. Reason for departure from normal operation.
3. Contingency actions taken to minimize biofouling accumulation (e.g. more frequent inspections) taken in the period when the ship is operating outside the expected operating profile.
4. Time and location (port name or latitude/longitude) when the ship operates again as specified in the BFMP.

(B) Maintenance/service or damage to AFC

1. Date/period and description of any observed reduction of the efficacy, damage or deviation from maintenance/service to anti-fouling coating (AFC) during its lifetime.
2. Date/period and description of any operation beyond expected lifetime.
3. Contingency actions taken to minimize biofouling accumulation (e.g. more frequent inspections).
4. Date/period and location where any AFC maintenance or repair was performed (e.g. in dry dock).
5. Description of any AFC, including patch repairs, that was applied during maintenance. Detail the type of AFC, the area and locations it was applied to (including the location of dry-dock support blocks if relevant), an estimated percentage cover of reapplication of the AFC, the coating thickness achieved and any surface preparation work undertaken (e.g. complete removal of underlying AFC or application of new AFC over the top of existing AFC).
6. Reference to any supporting data for AFC maintenance (e.g. AFC technical file).
7. Name, position and signature of the person in charge of the activity.

(C) Maintenance/service or downtime/malfunction of MGPS *(not applicable)*

1. Date/period and description of any observed reduction of the efficacy, downtime, malfunction or deviation from maintenance/service of marine growth prevention system (MGPS) during its lifetime.
2. Date/period and description of operation beyond the expected lifetime.
3. Date and location of any instances when the system was not operating in line with the BFMP.
4. Records of maintenance (including regularly monitoring the electrical and mechanical functions of the systems, calibration, or adjustment of treatment dosages).

5. Contingency actions taken to minimize biofouling accumulation (e.g. more frequent inspections).
6. Name, position and signature of the person in charge of the activity.

(D) Maintenance/service or downtime/malfunction of other AFS

1. Date/period and description of any observed reduction of the efficacy, downtime, malfunction or deviation from maintenance/service of other AFS during its lifetime.
2. Date/period and description of operation beyond expected lifetime.
3. Date and location of any instances when the system was not operating in line with the Biofouling Management Plan.
4. Records of maintenance.
5. Contingency actions taken to minimize biofouling accumulation (e.g. more frequent inspections).

(E) Deviation from regular use of expected proactive cleaning as specified in the BFMP

1. Date and location where ship did not conduct proactive cleaning as specified.
2. Contingency actions taken to minimize biofouling accumulation (e.g. inspections of biofouling and/or reactive cleaning before return to proactive cleaning activity).
3. Records of maintenance, if any.
4. Date when ship returned to normal activities with proactive cleaning.

(F) Deviation from necessary reactive cleaning as specified in the BFMP

1. Date and location where ship was inspected and reactive cleaning found necessary.
2. Contingency actions taken until reactive cleaning, including scheduling of reactive cleaning activity.
3. Date when ship completed the reactive cleaning and reference to relevant recording in Part I.

(G) When the ship is idle (berthed, anchored, moored) for a longer period

1. Date and location where ship was laid up, including general description of biofouling pressure, e.g. temperature and distance to the coastline.
2. Contingency actions taken to minimize biofouling accumulation (e.g. inspections, sea chests blanked off or short voyages taken prior to and following the period laid up).
3. Precautions taken to minimize biofouling accumulation (e.g. short voyage).
4. Date when ship returned to normal operations.

(H) When the ship has performance loss as per Performance Monitoring System for a period beyond the expected period as specified in the BFMP

1. Date and location where ship started with performance loss beyond the expectations.
2. Inspections or biofouling management actions taken prior to and following the period with performance loss.
3. Contingency actions taken to minimize biofouling accumulation.
4. Date when ship returned to normal performance.

(l) Other deviations

BIOFOULING RECORD BOOK

PART II – MONITORING OF BIOFOULING RISK PARAMETERS

Name of ship: VSLNAME

IMO Number: 9999999

BIOFOULING MANAGEMENT ACTIVITIES

Date	Code (letter)	Item (number)	Record of activity/ Signature of Officer in charge

Signature of Master _____

APPENDIX III – CLEANING AND INSPECTION REPORTS

12. INTRODUCTION

The Guidelines recommend that a report must be prepared after an inspection and/or cleaning operation. The report must:

01 Record the details of the biofouling management actions undertaken on the ship.

02 Be prepared by the inspection provider.

03 It may also be relevant to prepare a report after an inspection carried out by ship's crew as part of contingency actions.

04 Be prepared by either the cleaning operators or the inspection provider as part of a combined cleaning and inspection report.

Digital tools may be applied for the reporting and/or assessment of results. Record the conclusions from the reports in the BFRB, including reference to the detailed report/ assessment.

13. ENTRIES IN THE REPORT AFTER A BIOFOULING INSPECTION

Record the following information in the inspection report:

01 Ship particulars:

- Ship name
- IMO number

02 Date and place of inspection

03 Name of inspection/cleaning company

04 List of all inspected hull and niche areas

05 Inspection equipment used (including list of divers/ROV operators participating in the operation)

06 Inspection conditions (i.e. duration, estimated visibility underwater)

07 Signature of authorized person of the inspection/cleaning company

08 Inspection start and end times

09 Results:

10 Type of biofouling as per the rating of table in Section 6.1

11 Quantitative assessments of biofouling cover of area included (i.e. estimates of per cent cover) as per table in Section 6.1

12 AFC condition

- The condition of the AFC should be observed during the inspection and reported. The condition is recommended to be categorized in line with the condition of the AFC (see relevant table below)

13 MGPS condition *(not applicable)*

- The condition of the MGPS should be observed during the inspection and reported. The condition is recommended to be categorized in line with the condition of the MGPS (see relevant table below)

14 Photos/videos

- Photos and videos submitted or used in a digital assessment tool as evidence of hull fouling

SAMPLE OF INSPECTION REPORT

Ship's Name: VSLNAME

IMO Number: 99999999

Date:

Location/Port:

Inspection Organization/Responsible Officer:

Inspection conditions:

Inspection equipment used:

Divers/ROV operators participating:

Quantitative assessment of biofouling cover is summarized in the table below (in line with the ratings of table in Section 6.1)

QUANTITATIVE ASSESSMENT OF BIOFOULING COVER

Areas	Fouling rating (0-4)			Macro-fouling cover (%)
	Lowest rating	Highest rating	Most frequent rating	
Hull below the waterline				
Port vertical side				
1 m wide belt				
1 m wide belt of subsection X				
1 m wide belt of subsection X				
Starboard vertical side				
1 m wide belt				
1 m wide belt of subsection X				
1 m wide belt of subsection X				
Flat bottom front				
1 m wide belt				
1 m wide belt of subsection X				
Flat bottom mid				
1 m wide belt				
1 m wide belt of subsection X				
Flat bottom aft				
Hull below the waterline				
1 m wide belt				
1 m wide belt of subsection X				
Niche areas				
Bow subsection X				
Bow subsection X				
Bow thruster				
Bilge keels				

Sea chest gratings				
Location 1				
Location 2				
Stern				
Propeller and its shaft				
Rudder and rudder shaft				
Discharge pipes				
Rope guards				
Sounders/instruments				
Sacrificial anodes				
Internal seawater systems				
…..				
…..				

01 An area must be assigned a fouling rating equal to the highest rated 1 m2 identified along the subdivided areas.

02 The inspection must be as comprehensive as practicable. The more subdivided areas that are inspected, the greater the certainty that the biofouling for the area is realistic.

03 The identified niche areas must be in line with the BFMP.

01 During the inspection, observe and report the condition of the AFC and MGPS *(not applicable)*.

02 The condition must be categorized in line with the relevant tables below, respectively.

03 If the condition of the AFC could only be thoroughly assessed after reactive cleaning, table below must be part of the cleaning report.

THE CONDITION OF THE AFC

AFC condition								
Areas	**Intact & effective in preventing biofouling**	**Failure of adhesion between a coating & a metallic surface**	**Blistering in coating**	**Cracks in the coatings**	**Cold flow resulting in irregular coating thickness**	**Delamination/ Peeling/ Detachment between coatings**	**Polishing off coating during the ship's operation (beyond specifications)**	**Grounding/ General damage to coating**
Hull below the waterline								
Port vertical side								
subsection X								
Starboard vertical side								
subsection X								
Flat bottom front								
subsection X								
Flat bottom mid								
subsection X								
Flat bottom aft								
subsection X								
Bow								
Bow thruster								
Bilge keels								
Sea chest gratings								
Location X								
Location X								
Stern								
Propeller and shaft								
Rudder & rudder shaft								
Discharge pipes								
Rope guards								
Sounders/instruments								
Sacrificial anodes								

THE CONDITION OF THE MGPS *(not applicable)*

Areas examples (typical niche areas)	Condition of MGPS		
	Intact and effective in preventing biofouling	Calibration/maintenance required	Non-effective to prevent biofouling
Bow			
Bow thruster			
Bilge keels			
Sea chest gratings			
Location 1			
Location 2			
Stern			
Propeller and its shaft			
Rudder and rudder shaft			
Discharge pipes			
Rope guards			
Sounders/instruments			

Comments: ……..……

Reference to supporting photos/videos for fouling inspection and assessment of AFC/MGPS *(not applicable)*: ……

Signature of inspection organization or competent ship crew: ……..……...……

14. ENTRIES IN THE REPORT AFTER BIOFOULING MANAGEMENT (REACTIVE CLEANING)

The following information should be recorded in the cleaning report:

04 Ship particulars:

- Ship name
- IMO number

05 Date and place of inspection

06 Name of cleaning company

07 All hull and niche areas cleaned/treated specified and documented in the report, including also areas not cleaned/treated

08 Cleaning equipment used for hull

09 Cleaning equipment used for niche areas

10 Inspection equipment used (including list of divers/ROV operators participating in the operation)

11 Conditions during cleaning inspection (i.e. duration, estimated visibility underwater)

12 Signature of authorized person of the cleaning company

13 Cleaning start and end times

14 Results:

- Type of biofouling after reactive cleaning (as per the ratings of table in Section 6.1)
- Quantitative assessments of biofouling cover after cleaning (as per of table in Section 6.1)

15 AFC condition (unless assessed during inspection)

- The condition of the AFC should be observed during the cleaning activity and reported using the conditions as categorized in relevant table above

16 Photos/videos

17 Photos and videos submitted or used in a digital assessment tool as evidence of hull cleaning

18 Capture

- Description of capture method
- Supporting evidence that dislodged material (by mass) has been captured
- (Reference to equipment specification and validation test report may be sufficient)

19 Describe treatment1 and/or disposal of waste material captured during cleaning in the report.

20 Attach evidence of delivery to waste management facility or facilities to the cleaning report.

[1] Treatment is any process designed to remove or deactivate any biofouling material and particulate or dissolved waste substances captured or produced during any stages of cleaning.

21 Dispose the biofouling waste of and/or treat in a safe and environmentally sound manner, in accordance with local regulations.

22 Ensure that the main objective of the Guidelines, to minimize the spread of invasive aquatic species, is safeguarded.

SAMPLE OF BIOFOULING CLEANING REPORT

Ship's Name:	VSLNAME
IMO Number:	99999999
Date:	
Location/Port:	
Cleaning Company:	
In-water conditions:	
Technologies used for reactive cleaning of hull and niche areas:	

SUMMARY OF THE OPERATIONS

Areas examples	New fouling rating after performed cleaning		
	Lowest rating	Highest rating	Most frequent rating
Hull below the waterline			
Port vertical side			
subsection X			
subsection X			
subsection X			
Starboard vertical side			
subsection X			
subsection X			
subsection X			
Flat bottom front			
subsection X			
subsection X			
Flat bottom mid			
subsection X			
subsection X			
Flat bottom aft			
subsection X			
subsection X			
Niche areas			
Bow			
Bow thruster			
Bilge keels			
Sea chest gratings			
Location 1			
Location 2			
Stern			
Propeller and its shaft			
Rudder and rudder shaft			

Discharge pipes			
Rope guards			
Sounders/instruments			
Sacrificial anodes			
Internal seawater systems			
….			
….			

Description of activity and reference to supporting evidence (photos/videos):
Description of capture:
Description of treatment and/or biofouling waste disposal with supporting evidence (e.g. receipts):
Description of any problems encountered during cleaning including details of any damage to the AFS that may have occurred:
Comments:

Signature of Cleaning Organization _____

APPENDIX IV

NATIONAL OR LOCAL REQUIREMENTS FOR THE CONTROL AND MANAGEMENT OF SHIP'S BIOFOULING

1. CALIFORNIA

This section contains the additional requirements related to Biofouling Management according to the California State Regulations "Biofouling Management to Minimize the Transfer of Nonindigenous Species from Vessels Arriving at California Ports" (California Code of Regulations Title 2, Division 3, Chapter 1, Article 4.8).

1.1. Application

The provisions described in this Appendix apply to newly constructed vessels delivered on or after 1 January 2018, and to existing vessels beginning with completion of the first regularly scheduled out-of-water maintenance on or after 1 January 2018. The Marine Invasive Species Program Annual Vessel Reporting Form (see Section 8. below) became effective from 1 October 2017.

1.2. Definitions

Biocidal anti-fouling coating

An anti-fouling coating containing one or more chemical substances that are toxic or act as a deterrent to the settlement of living organisms.

CCR

California Code of Regulations

Commission staff

Staff of the California State Lands Commission

Division Chief

The Chief of the Marine Environmental Protection Division of the California State Lands Commission or any employee of the Marine Environmental Protection Division authorized by the Division Chief to act on her or his behalf.

Effective coating lifespan

The expected age of an anti-fouling coating, as determined by the manufacturer and based on the vessel-specific application scheme (e.g. coating thickness) at the time of application, at which the coating is no longer expected to satisfactorily prevent or deter biofouling.

Extended residency period

Remaining in one Port consecutively for 45 days or longer.

Foul-release coating

A non-biocidal anti-fouling coating with surface properties that minimize the adhesion of biofouling organisms, resulting in organism detachment by vessel movement.

Geographic location

A Port, anchorage, city and country, or latitude and longitude coordinates.

Non-biocidal anti-fouling coating

An anti-fouling coating that does not rely on one or more chemical substances intended to be toxic or act as a deterrent to organism settlement in order to achieve its anti-fouling properties. Non-biocidal anti-fouling coatings may include foul-release coatings.

Obviously excessive biofouling

Macrofouling percentage cover significantly in excess of fifteen percent of the wetted surface under investigation, as determined using the biofouling compliance assessment protocols. Filamentous or turf algae on the bulbous bow and at the waterline, including one meter above and one meter below the waterline, shall be excluded from this calculation.

Out-of-water support blocks

Support blocks placed underneath the vessel while the vessel is undergoing out-of-water maintenance in a dry dock or slipway.

Port

Any Port or place in which a vessel was, is, or will be anchored or moored, or where a vessel will transfer cargo.

Vessel

A vessel of 300 gross registered tons (GRT) or more.

1.3. Application of Biofouling Management

1. Biofouling Management shall apply to the following niche areas, if present:
   - Sea chests
   - Sea chest gratings
   - Bow and stern thrusters
   - Bow and stern thruster gratings
   - Fins stabilizers and recesses

- Out-of-water support strips
- Propellers and propeller shafts
- Rudders.

2. Biofouling in niche areas must be managed using one or more biofouling management practices that are appropriate for the vessel and its operational profile, as determined by the Master, Owner, Operator, or Person in charge of a vessel, and subject to the following conditions:
- All niche area management practices to be employed as part of the overall biofouling management strategy shall be listed in the Biofouling Management Plan, as required by 2 CCR § 2298.3(b)(2).
- Document all completed niche area management practices in the Biofouling Record Book, as required by 2 CCR 2298.4(b)(2).
- If any of the niche area management practices listed in the Biofouling Management Plan are not conducted as planned, document the reason(s) why the practice(s) were not conducted in the Biofouling Record Book.

1.4. Biofouling Management Plan – Additional California Requirements

1. Master, Owner, Operator, or Person in charge of the vessel (carrying, or capable of carrying, ballast water) calling at a California Port:
- Maintain a ship-specific Biofouling Management Plan onboard.
- Upon request, make the plan available to Commission staff for inspection/review.
- This plan must provide a description of the biofouling management strategy for the vessel that is sufficiently detailed to allow the Master or other appropriate ship's officer or crew member serving on that vessel to understand and follow the biofouling management strategy.
- Regularly review and revise it to be current as of the last day of the most recent out-of-water maintenance or delivery if the vessel has never undergone out-of-water maintenance.

2. If a vessel does not have a Biofouling Management Plan, and is arriving at a California port for the first time since the most recent regularly scheduled out-of-water maintenance or since delivery as a newly constructed vessel, if no out-of-water maintenance has yet occurred, there shall be a 60-day grace period commencing on the date of arrival to enable the development of the required documents.

1.5. Biofouling Record Book – Additional California Requirements

1. Master, Owner, Operator, or Person in charge of the vessel that arrives at a California Port:
   - Maintain a Biofouling Record Book to be retained onboard the vessel.
   - The Biofouling Record Book must contain details of all inspections and biofouling management measures undertaken on the vessel since the beginning of the most recent scheduled out-of-water maintenance or since delivery into service as a newly constructed vessel if no out-of-water maintenance has yet occurred.
2. If a vessel does not have a Biofouling Record Book consistent with the requirements of subdivisions (a) and (b) of this section and is arriving at a California Port for the first time since the most recent regularly scheduled out-of-water maintenance or since delivery as a newly constructed vessel if no out-of-water maintenance has yet occurred, there shall be a 60-day grace period commencing on the date of arrival to enable the development of the required documents. D
3. Master, Owner, Operator, or Person in charge of the vessel that arrives at a California Port: During the 60-day grace period:
   - Maintain records containing details of all inspections and biofouling management measures undertaken on the vessel since the beginning of the most recent regularly scheduled out-of-water maintenance or since delivery into service as a newly constructed vessel if no out-of-water maintenance has yet occurred; and
   - Make the records described in 2 CCR § 2298.4(c)(1) available to Commission staff upon request.

1.6. Marine Invasive Species Program Annual Vessel Reporting Form

1. All vessels of 300 gross tons or more (carrying, or capable of carrying, ballast water) calling at a California Port, must submit a completed “Marine Invasive Species Program Annual Vessel Reporting Form”, starting from 1 October 2017.
2. This electronic form must be submitted at least twenty-four hours in advance of the first arrival of each calendar year at a California Port of call via: **Online: https://misp.io**

MARINE INVASIVE SPECIES PROGRAM ANNUAL VESSEL REPORTING FORM

Vessel Name:	
Official / IMO Number:	
Responsible Officer's Name and Title:	
Date Submitted (Day/Month/Year):	

1. Does the vessel have a ballast water treatment system installed?

Yes ☐	If "YES" Complete sections 1 and 2
No ☐	If "NO" Complete section 1 only

SECTION 1: HULL HUSBANDRY MAINTENANCE AND OPERATIONAL INFORMATION

1. Since delivery, has this vessel ever been removed from the water for maintenance?

Yes ☐

No ☐

01 If Yes, enter the date and location of the most recent out-of-water maintenance:

Last date out of water (**Day/Month/Year**):	
Port or Position:	Country:

02 If No, enter the delivery date and location where the vessel was built:

Delivery date (**Day/Month/Year**):	
Port or Position:	Country:

2. Were the submerged portions of the vessel coated with an anti-fouling treatment or coating during the **out-of-water** maintenance or shipbuilding process listed above?

Yes, partial coat	☐	Date last full coat applied (**Day/Month/Year**)
No coat applied	☐	Date last full coat applied (**Day/Month/Year**)

Official / IMO Number: _____

3. For the most recent full coat application of anti-fouling treatment, what type of anti-fouling treatment was applied and to which specific sections of the submerged portion of the vessel was it applied?

Manufacturer/Company:					
Product Name:					
Applied on **(Check all that apply)**:					
☐ Hull Sides	☐ Hull Bottom	☐ Sea Chests	☐ Sea Chest Gratings	☐ Propeller	☐ Rudder
☐ Docking	☐ Bilge Keels	☐ Thrusters	☐ Previous Blocks	☐ Rope Guard / Propeller Shaft	

Manufacturer/Company:					
Product Name:					
Applied on **(Check all that apply)**:					
☐ Hull Sides	☐ Hull Bottom	☐ Sea Chests	☐ Sea Chest Gratings	☐ Propeller	☐ Rudder
☐ Docking	☐ Bilge Keels	☐ Thrusters	☐ Previous Blocks	☐ Rope Guard / Propeller Shaft	

Manufacturer/Company:					
Product Name:					
Applied on **(Check all that apply)**:					
☐ Hull Sides	☐ Hull Bottom	☐ Sea Chests	☐ Sea Chest Gratings	☐ Propeller	☐ Rudder
☐ Docking	☐ Bilge Keels	☐ Thrusters	☐ Previous Blocks	☐ Rope Guard / Propeller Shaft	

Manufacturer/Company:					
Product Name:					
Applied on **(Check all that apply)**:					
☐ Hull Sides	☐ Hull Bottom	☐ Sea Chests	☐ Sea Chest Gratings	☐ Propeller	☐ Rudder
☐ Docking	☐ Bilge Keels	☐ Thrusters	☐ Previous Blocks	☐ Rope Guard / Propeller Shaft	

4. Were the sea chests inspected and/or cleaned during the out-of-water maintenance listed above? If no out-of-water maintenance was performed since delivery, select Not Applicable.

Check all that apply:	
☐ Yes, sea chests inspected	☐ Yes, sea chests cleaned
☐ No, sea chests not inspected or cleaned	☐ Not Applicable

5. Are Marine Growth Protection Systems (MGPS) installed in the sea chest(s) or sea strainer(s)?

If Yes:	
Manufacturer:	
MGPS installed in (check all that apply):	
☐ Sea Chest(s)	☐ Sea strainer(s)

Official / IMO Number: _____

6. Has the vessel undergone in-water cleaning to the submerged portions of the vessel since the last out-of-water maintenance period?

Yes ☐

No ☐

01 If Yes, when and where did the vessel most recently undergo **in-water** cleaning?

(DO NOT include cleaning performed during out-of-water maintenance period)

Date (**Day/Month/Year**):					
Port or Position:			Country:		
Section(s) cleaned **(Check all that apply)**:					
☐ Hull Sides	☐ Hull Bottom	☐ Sea Chests	☐ Sea Chest Gratings	☐ Propeller	☐ Rudder
☐ Docking	☐ Bilge Keels	☐ Thrusters	☐ Previous Blocks	☐ Rope Guard / Propeller Shaft	
Cleaning method		☐ Divers	☐ Robotic	☐ Both	

7. Has the propeller been polished since the last **out-of-water** maintenance (including shipbuilding process) or **in-water** cleaning?

Yes ☐ Date last full coat applied (**Day/Month/Year**): _____

No ☐

8. Are the anchor and anchor chains rinsed during retrieval?

Yes ☐

No ☐

9. List the following information for this vessel averaged over the last four months

Average Voyage Speed (knots):
Average Port Residency Time (hours or days): Hours or Days

10. Since the hull was last cleaned (**out-of-water** or **in-water**), has the vessel visited:

01 Fresh water ports (Specific gravity of less than 1.005)?

Yes ☐ How many times?

No ☐

02 Tropical ports (between 23.5°S and 23.5°N latitude)?

Yes ☐ How many times?

No ☐

03 Panama Canal?

Yes ☐ How many times?

No ☐

Official / IMO Number: _____

11. List the previous 10 Ports visited by this vessel in the order they were visited (start with most recent). You DO NOT have to use all 10 spaces if the vessel has a regular route that involves less than 10 Ports.

Check here ☐ if the vessel visits the same ports on a regular route.

List dates as (**Day/Month/Year**).

Port or Position:		**Country:**	
Arrival date:		**Departure date:**	

Port or Position:		Country:	
Arrival date:		Departure date:	

Port or Position:		Country:	
Arrival date:		Departure date:	

Port or Position:		Country:	
Arrival date:		Departure date:	

Port or Position:		Country:	
Arrival date:		Departure date:	

Port or Position:		Country:	
Arrival date:		Departure date:	

Port or Position:		Country:	
Arrival date:		Departure date:	

Port or Position:		Country:	
Arrival date:		Departure date:	

Port or Position:		Country:	
Arrival date:		Departure date:	

Port or Position:		**Country:**	
Arrival date:		**Departure date:**	

Port or Position:		**Country:**	
Arrival date:		**Departure date:**	

Port or Position:		**Country:**	
Arrival date:		**Departure date:**	

Official / IMO Number: _____

12. Since the most recent hull cleaning (out-of-water or in-water) or delivery, has the vessel spent 10 or more consecutive days in any single location? (DO NOT include time out-of-water or during in-water cleaning.)

No ☐	Indicate the longest amount of time spent in a single location since the last hull cleaning

Number of Days:		**Date of Arrival:**	
Port or Position:		**Country:**	

Yes ☐	List all of the occurrences where the vessel spent 10 or more consecutive days in any single location since the last hull cleaning. List dates as (**Day/Month/Year**):

Number of Days:		**Date of Arrival:**	
Port or Position:		**Country:**	

Number of Days:		**Date of Arrival:**	
Port or Position:		**Country:**	

Number of Days:		Date of Arrival:	
Port or Position:		Country:	

Number of Days:		Date of Arrival:	
Port or Position:		Country:	

Number of Days:		Date of Arrival:	
Port or Position:		Country:	

Number of Days:		Date of Arrival:	
Port or Position:		Country:	

Number of Days:		Date of Arrival:	
Port or Position:		Country:	

Number of Days:		Date of Arrival:	
Port or Position:		Country:	

Number of Days:		Date of Arrival:	
Port or Position:		Country:	

Number of Days:		Date of Arrival:	
Port or Position:		Country:	

Official / IMO Number: _____

SECTION 2: BALLAST WATER TREATMENT SYSTEM INFORMATION

COMPLETE ONLY IF VESSEL HAS A BALLAST WATER TREATMENT SYSTEM INSTALLED

Note: Complete a separate Section 2 for each installed ballast water treatment system

1. Provide the following information about the vessel's installed ballast water treatment system:

Manufacturer/Company:	
Product Name:	
Model Number:	
Date System Commissioned (Day/Month/Year):	

2. Has the installed ballast water treatment system been used to treat ballast water in the last 12 months?

Yes ☐ Number of times the system was used in the last 12 months:

No ☐

3. Has the installed ballast water treatment system malfunctioned in the last 12 months?

Yes ☐ Date of Most Recent Malfunction (**Day/Month/Year**):

Describe all malfunctions during the previous 12 months:

Describe all repairs for all malfunctions during the previous 12 months:

No ☐

4. Has an onboard test for biological performance of the vessel's installed ballast water treatment system been completed since the system was commissioned?

Yes ☐ If "YES", List the dates of the tests (**Day/Month/Year**):

No ☐

Official / IMO Number: _____

INSTRUCTIONS

As used in this form, "vessel" has the same meaning as defined in California Code of Regulations, Title 2, section 2298.2. Applicability of this reporting requirement is defined in California Code of Regulations, Title 2, section 2298.5.

SUBMIT THE COMPLETED FORM AT LEAST TWENTY-FOUR HOURS IN ADVANCE OF THE FIRST ARRIVAL OF THE CALENDAR YEAR AT A CALIFORNIA PORT TO: Online: **https://misp.io**

Report information using the following instructions:

Question 1: Check the appropriate box to indicate whether the vessel has an onboard ballast water treatment system installed.

- If Yes was selected, complete both Section 1 and Section 2
- If No was selected, complete only Section 1

Section 1: Hull Husbandry Maintenance and Operational Information

Question 2: Check the appropriate box to indicate whether, since delivery, the vessel has ever been removed from the water for maintenance.

- If "Yes" was selected, enter the date (Day/Month/Year) and location for the most recent out-of-water maintenance period (for example, if vessel was out of water for dry-dock from 1 January 2016 through 10 January 2016, list 10 January 2016 as the last date out of water)
- If "No" was selected, enter the vessel's delivery date (Day/Month/Year) and the location where the vessel was built

Question 3: Check the appropriate box to indicate whether the vessel's hull was coated with an anti- fouling treatment/coating during the out-of-water maintenance period or shipbuilding process described in Question 2.

- If "Yes, full coat applied" was selected, move on to Question 4
- If "Yes, partial coat" was selected, list completion date (Day/Month/Year) of most recent full coat application of an anti-fouling treatment/coating
- If "No coat applied" was selected, list completion date (Day/Month/Year) of most recent full coat application of an anti-fouling treatment/coating

Question 4: For the most recent full coat application of anti-fouling treatment/coating, list the manufacturer(s)/company(ies) and product names of the treatment(s)/coating(s) and check the box next to the specific section(s) of the submerged portions of the vessel where each treatment

was applied (check all sections that apply). List information for each anti-fouling treatment/coating if more than one was applied. Attach additional pages if necessary.

Question 5: Check the appropriate box to indicate whether the sea chest(s) were inspected and/or cleaned during the most recent out-of-water maintenance period described in Question 2. If no out-of- water maintenance since delivery, check Not Applicable.

Question 6: Marine Growth Protection Systems (MGPS) are systems installed in the sea chests or sea strainers to prevent the accumulation of fouling organisms within the sea chests and associated seawater circulation networks. Check the appropriate box to indicate if a Marine Growth Protection System is installed in the sea chest(s).

- If "Yes" was selected, list the Manufacturer and Model
- If "Yes" was selected, indicate whether MGPS is installed in sea chests or strainers (or both)
- If "No" was selected, move on to Question 7

Question 7: Check the appropriate box to indicate if the vessel has undergone in-water cleaning on the submerged portions of the vessel since the last out-of-water maintenance period. In-water cleaning does not include cleaning carried out during out-of-water maintenance but does include cleaning carried out during the Underwater Inspection In lieu of Dry-Docking (UWILD). For this question, out-of-water maintenance includes the shipbuilding process.

- If "Yes" was selected, answer Question 7a
- If "No" was selected, move on to Question 8

Question 7a: Provide date (Day/Month/Year) and location of most recent in-water cleaning (do not include cleaning performed during out-of-water maintenance period) as well as the vendor that conducted the in-water cleaning. Check the box next to the appropriate sections to indicate those sections of the vessel that were cleaned during the in-water cleaning described in Question 7. Indicate whether in-water cleaning was conducted by divers, a robotic system, or both.

Question 8: Check the appropriate box to indicate whether the propeller has been polished since the most recent out-of-water maintenance or in-water cleaning. For this question, **out-of-water** maintenance includes the shipbuilding process.

- If "Yes" was selected, list the date of the most recent propeller polishing
- If "No" was selected, move on to Question 9

Question 9: Check the appropriate box to indicate whether the anchor and anchor chains are rinsed during retrieval.

Question 10a: Over the past four months, list the average speed (knots) at which this vessel has travelled.

Question 10b: Over the past four months, list the average length of time (either hours or days) that this vessel has spent in any given port.

Question 11a: Check the appropriate box to indicate whether this vessel has visited any freshwater ports (specific gravity of less than 1.005) since the hull was last cleaned (either in-water or out-of- water) or since delivery if the hull has never been cleaned.

- If "Yes" was selected, list the number of times that this vessel visited freshwater ports since the hull was last cleaned or since delivery if the hull has never been cleaned

Question 11b: Check the appropriate box to indicate whether this vessel has visited any tropical ports between latitudes 23.5^{o} S and 23.5^{o} N since the hull was last cleaned (either in-water or out-of- water) or since delivery if the hull has never been cleaned.

- If "Yes" was selected, list the number of times that this vessel visited tropical ports since the hull was last cleaned or since delivery if the hull has never been cleaned.

Question 11c: Check the appropriate box to indicate whether this vessel has traversed the Panama Canal since the hull was last cleaned (either in-water or out-of-water) or since delivery if the hull has never been cleaned.

- If "Yes" was selected, list the number of times that this vessel has traversed the Panama Canal since the hull was last cleaned or since delivery if the hull has never been cleaned.

Question 12: Starting with the most recent port, list the last 10 ports visited by this vessel. Provide information on the port or place, country, and the dates of arrival and departure.

If this vessel follows a regular route, visiting the same ports routinely, place a check in the box provided and list the information for the most recently completed route. You do not have to use all ten spaces if the regular route involves less than 10 ports. Add more lines if the regular route involves more than ten ports.

Question 13: Check the appropriate box to indicate whether this vessel has spent 10 or more consecutive days in any single location since the last time the hull was cleaned (either in-water or out of water) or since delivery if the hull has never been cleaned. Do not include time spent out-of-water or time spent during in-water cleaning.

- If "No" was selected, enter the information for the single longest amount of time this vessel has spent in a single location since the last hull cleaning or since delivery if the hull has never been cleaned.
- If "Yes" was selected, list all of the occurrences where the vessel spent 10 or more consecutive days in any single location since the last hull cleaning or since delivery if the hull has never been cleaned.

Section 2: Ballast Water Treatment System Information

COMPLETE ONLY IF VESSEL HAS A BALLAST WATER TREATMENT SYSTEM INSTALLED

If more than one treatment system is installed onboard the vessel, Section 2 must be filled out separately for each system.

Question 14: Provide the following information for each ballast water treatment installed on the vessel:

- System manufacturer or company (For example - Acme Incorporated)
- Product name, if applicable (For example - Acme Ballast Water Treatment System)
- Model number, if applicable (For example - Acme Model # 5454). DO NOT provide the serial number.
- Date (Day/Month/Year) the ballast water treatment system was commissioned. This is the date that the system was determined to be ready for active service including:

01 Functionally ready for use, and

02 Has received all applicable use approvals.

Question 15: Provide the number of times the vessel's installed ballast water treatment system was used during the previous 12 months.

Question 16: Check the appropriate box to indicate whether the installed ballast water treatment system has malfunctioned during operation in the previous 12-month period. Attach additional pages as necessary.

- If "Yes" was selected:
  - List the date of the most recent malfunction
  - Describe the malfunction including the type of malfunction (for example software, chemical, operational, plumbing, etc.)
  - Describe all repairs that were completed as a result of each malfunction
- If "No" was selected, move on to Question 17

Question 17: Check the appropriate box next to indicate whether an onboard test for biological efficacy has been completed since the system was installed. Biological efficacy is the ability of the ballast water treatment system to reduce the number of viable organisms in water.

- If "Yes" was selected, list the dates (Day/Month/Year) for all tests of biological efficacy since the system was installed.
- If "No" was selected, this is the end of the form.

1.7. Biofouling Management for Wetted Surfaces

Arriving at a California Port or place, manage biofouling on the wetted surfaces of the vessel, except those niche areas described in the section 3, in any of the following ways:

1. If vessel is using an anti-fouling coating, the coating shall not be aged beyond its effective coating lifespan. If vessel is using an anti-fouling coating and the coating is aged beyond its effective coating lifespan, as documented in 2 CCR §2298.3(b)(2)(C), document in the Biofouling Management Plan:
   - How biofouling on the wetted surfaces of the vessel (except those niche areas listed in the section 3.1) shall be managed after the effective coating lifespan is exceeded.
   - All biofouling management actions undertaken, and reports resulting from such actions, in the Biofouling Record Book.
2. If a vessel is not using an anti-fouling coating, document in the Biofouling Management Plan:
   - How biofouling on the wetted surfaces of the vessel (except those niche areas listed in the section 3.1) shall be managed in the absence of an anti-fouling coating.
   - All biofouling management actions undertaken and reports resulting from such actions shall be documented in the Biofouling Record Book.
3. Master, Owner, Operator, or Person in charge of the vessel: Prior arriving at a California Port, manage:
   - Biofouling on the niche areas (as listed in the section 3.1), if present, with practices appropriate for the vessel and its operational profile, as determined by you, and in a manner consistent with the requirements of section 3.2.
   - Any other niche areas in a manner consistent with section 3.2.

1.8. Requirements for Vessels with Extended Residency Periods

Master, Owner, Operator, or Person in charge of the vessel: If you have had an extended residency period since its most recent out-of-water maintenance, in-water treatment, or in-water cleaning, ensure that the vessel is compliant with the following requirements upon arrival to a California Port:

01 Manage biofouling in the niche areas listed in section 3.1, if present, in a manner that is consistent with the niche area management practices listed in the Biofouling Management Plan.

02 Document all activities employed to manage biofouling in the niche areas described in section 3.1, if present, that accumulates as a result of the extended residency period in the Biofouling Record Book.

03 Document any activities, including in-water inspection, in-water cleaning, in-water treatment, or out-of-water maintenance, to manage biofouling on the wetted surfaces of the

vessel, except those niche areas listed in section 3.1, that accumulates as a result of the extended residency period in the Biofouling Record Book.

1.9. Propeller Cleaning in California Waters

Propeller cleaning in California waters **is not prohibited.**

1.10. Emergency Exemptions

A vessel will be exempt from the requirements contained within Article 4.8 if all of the following conditions are satisfied:

1. The vessel makes an unscheduled arrival to a California Port because of an emergency, where the safety of the vessel or crew is compromised.
2. Arrival for the sole purpose of scheduled bunkering is not an emergency under this clause.
3. The Master, Owner, Operator, Agent, or Person in charge of the vessel notifies the Division Chief, in electronic form, of the emergency, and provides details on the nature of the emergency, no later than twenty-four hours after the arrival and cessation of the emergency.
4. The vessel has not arrived to another California port since the most recent of the:
   - Previous out-of-water maintenance
   - Vessel's delivery into service; or
   - Date when the vessel owner commenced ownership of the vessel.
5. The vessel will remain in California waters for 21 days or less. If the vessel remains in California waters for greater than 21 days, the Division Chief may require the Master, Owner, Operator, or Person in charge of a vessel to clean or treat the vessel to remove or inactivate macrofouling, using available in-water cleaning technologies, in-water treatment technologies, or out-of-water maintenance. The Division Chief will consider the biofouling extent, vessel port residency duration, and available in-water cleaning or treatment options when making this determination.

2. AUSTRALIA

Australian requirements related to Biofouling Management on Vessels according to the “Australian biofouling management requirements” and “Biosecurity Act” are provided here below.

2.1. Application

These requirements apply to all vessels subject to biosecurity control within Australian territorial seas.

2.2. Abbreviations

MARS	Maritime and Aircraft Reporting System

2.3. Pre-arrival reporting

Vessel operators shall accurately report how biofouling has been managed prior vessel’s arriving in Australian territorial seas as per Section 193 of the Biosecurity Act. This information shall be reported through MARS at least 12 hours, but no earlier than 96 hours, before the first vessel’s estimated port in Australian territory.

Vessel operators must report:

1. If they can demonstrate compliance with one of the following 3 proactive biofouling management options:
   - Implementation of an effective biofouling management plan and record book
   - Vessel cleaned of all biofouling within 30 days prior to arriving in Australian territory; or
   - Implementation of an alternative biofouling management method pre-approved by the Department.
2. If they intend to in-water clean in Australian waters and to update their pre-arrival report if that intention changes.

If they cannot demonstrate compliance with one of the 3 proactive biofouling management options will be subject to further pre-arrival reporting questions through MARS.

Biosecurity Officers may conduct a vessel inspection on arrival at an Australian Port to assess and manage potential biosecurity risks.

2.3.1. Proactive biofouling management options

Option 1: Biofouling management plan and record book

Vessel’s BFMP and BFRB, as per Australian requirements, must be available on request.

Option 2: Vessel cleaned of all biofouling within 30 days prior to arrival

The cleaning report (Appendix III of this Plan) and supporting evidence as per Australian requirements to satisfy the requirements of proactive biofouling management option must be available on request.

This report shall include the following items (except for the ones required by Resolution MEPC.378(80) as per Australian requirements:

1. Location, commencement and completion times and dates the cleaning operations took place and the date the final report was provided
2. Water clarity and tidal current (maximum and minimum in metres)
3. Manufacturer and model of cleaning method used (if applicable)
4. Supporting photographs or videos must be:
   - Date and time stamped
   - Clear and in focus
   - High quality (not pixelated)
   - Written description of the image, including the location on the vessel
   - Stable and smooth video recordings.
5. General observations regarding biofouling (i.e. Estimates of percentage cover and level of biofouling (e.g. micro/macrofouling), extent of biofouling and predominant biofouling types, e.g. mussels, barnacles, tubeworms, algae and slime), before and after cleaning, including those areas that were not cleaned.

Option 3: Alternative biofouling management method pre-approved by the department

If the vessel has an alternative biofouling management method pre-approved by the Department, the following documents must be available on request:

01 Written approval, specific to the vessel and voyage issued by department. The method shall be approved by department prior vessel's arrival to meet the relevant requirements for this option.

02 Any required document as specified in the Department issued approval.

Obtaining pre-approval for option 3

The Department will consider applications for this option, if the vessel operator can provide:

01 A proposed alternative method that appropriately manages the biosecurity risk associated with the vessel's biofouling

02 Sufficient evidence to substantiate the proposal.

Applications for an alternative biofouling management method must include:

01	A completed and signed application form
02	The most recent in-water inspection and cleaning reports
03	Evidence to support your application.

The application form shall be requested by marinepests@aff.gov.au. The completed form shall be sent back to marinepests@aff.gov.au no later than 30 days prior to arrival in Australian territorial seas. The Department may request further information to process the application.

2.3.2. Vessel operators unable to demonstrate proactive management

A vessel operator that cannot demonstrate proactive biofouling management practices using one of the 3 accepted management options will be required to provide additional information in their pre-arrival report.

The Department will use these responses to make a preliminary assessment of the biosecurity risks associated with the biofouling management practices on the vessel. This will inform the actions taken by the department on the vessel's arrival into Australia.

2.4. In-water cleaning in Australian waters

In-water cleaning is the physical removal of biofouling from submerged surfaces of vessels or other structures. In-water cleaning includes hull grooming, propeller cleaning or polishing and cleaning of niche areas.

Release of biofouling and toxicants during in-water cleaning operations can impact the aquatic environment, water quality and human health by spreading invasive aquatic species and pathogens.

2.4.1. Requests to in-water clean in Australia

The approval process to conduct in-water cleaning or treatment in Australian is complex. The application process varies between jurisdictions and can involve multiple government agencies and port authorities who consider the biosecurity risks and impacts the activity will have on the environment.

To request permission for in-water cleaning in Australian state or territory waters, contact the relevant authorities. It is important you give authorities sufficient time to consider your request

before your proposed cleaning activity. Some Australian state and territory governments have separate legislation relating to the removal and disposal of biofouling. Ensure you check with the relevant state and territories.

2.4.2. State and territory contacts

Contact the relevant state or territory authority for advice on cleaning:

New South Wales	
Department of Primary Industries	Email: aquatic.biosecurity@dpi.nsw.gov.au
Port Authority of NSW	Email: SY_ShippingManager@portauthoritynsw.com.au
Northern Territory	
Department of Primary Industry and Fisheries	Email: aquaticbiosecurity@nt.gov.au
Queensland	
Department of Agriculture & Fisheries	Email: callweb@daf.qld.gov.au / info@ehp.qld.gov.au Phone: 13 25 23 / 13 74 68

Additionally, contact the Port Authority, Harbour Master or Maritime Safety Queensland depending on location of proposed clean.

South Australia	
Primary Industries & Regions SA	Email: PIRSA.MinisterialExemptionsandPermits@sa.gov.au / epainfo@sa.gov.au Phone: (08) 8429 0823 / (08) 8204 2004 or 1800 623 445
Department of Environment & Water SA	Phone: (+61 8) 8204 1910
Tasmania	
Biosecurity Tasmania - Department of Natural Resources & Environment Tasmania	Email: biosecurity.tasmania@nre.tas.gov.au or invasivespecies@nre.tas.gov.au Phone: (03) 6169 9021 or (03) 6165 3777
TasPorts	Email: reception@tasports.com.au Phone: 1300 366 742
EPA Tasmania - Incident Response Officer	Email: incidentresponse@epa.tas.gov.au Phone: 1800 005 171

Victoria	
Department of Energy, Environment & Climate Action	Email: marine.pests@ecodev.vic.gov.au
Western Australia	

Department of Primary Industries & Regional Development – Aquatic Pest Biosecurity Group[2]	Email for Vessel Management enquires: vessel.management@dpird.wa.gov.au Email for general Aquatic Pest Biosecurity enquires: aquatic.biosecurity@dpird.wa.gov.au Phone: (08) 9203 0111
Great Barrier Reef Marine Park	
Great Barrier Reef Marine Park Authority – Assessments & Permissions[3]	Email: assessments@gbrmpa.gov.au

2.5. Non-commercial vessels

Non-commercial vessels arriving in Australian territorial seas will have the option to submit a non-commercial vessel pre-arrival report (NCV PAR). If the non-commercial vessel operator submits an NCV PAR, questions relating to the biofouling management practices on the vessel must be answered.

The responses provided in the NCV PAR will inform the Department's policies for management of biosecurity risks associated with biofouling on non-commercial vessels. Biosecurity Officers will continue to assess the level of biosecurity risk associated with biofouling on arrival and may take necessary actions to address these risks.

2.6. Verification on arrival

The Department conducts verification inspections to ensure proactive biofouling management options recorded in the pre-arrival report have been implemented. Biosecurity Officers may ask questions and inspect documents to confirm the effectiveness of the management practices.

If the Department determines that the vessel's biofouling has been managed as per Australian requirements, a further detailed biofouling assessment will be conducted. This will require vessel operators to provide information on biofouling management actions for biosecurity officers to assess the biofouling related biosecurity risk the vessel presents.

The Department may also conduct inspections of vessels' submerged hull and niche areas to inform assessments of whether the vessel presents an unacceptable biosecurity risk associated with biofouling.

[2] This Department only assess the pest biosecurity risk. Please contact the relevant Harbour Master/Port Authority for cleaning in declared port areas and other relevant Authorities for advice on contaminant release or discharges.
[3] For all in-water cleaning related activities in the Great Barrier Reef Marine Park.

3. NEW ZEALAND

Additional requirements related to Biofouling Management on Vessels arriving to New Zealand according to the “Craft Risk Management Standard (CRMS)” are provided here below. This (CRMS) specifies the biosecurity risk management and information requirements that must be met when vessels enter New Zealand Territory (NZT).

Upon arrival, verification that these requirements have been met may be carried out (verification may include inspections).

3.1. Abbreviations

CRMP	Craft Risk Management Plan
CRMS	Craft Risk Management Standard
MPI	Ministry for Primary Industries
NZT	New Zealand Territory

3.2. Definitions

Commercial vessels

Vessels generally move at medium to high speeds and aren't likely to be stationary for long periods of time such as commercial cargo vessels, trading ships, container ships, bulkers and cruise vessels. Most commercial vessels fall under MPI's short-stay category when arriving in New Zealand.

MPI-approved system

A management system approved by a chief technical officer that ensures vessels are free of biosecurity contaminants and regulated pests. Specific system types approved under this CRMS include the MPI-approved System for cruise vessels to manage topside and biofouling risk

New Zealand territory

The land and the waters enclosed by the outer limits of the territorial sea (out to 12nm), where territorial sea has the meaning given to it in section 3 of the Territorial Sea, Contiguous Zone, and Exclusive Economic Zone Act 1977

Non-indigenous species

Organisms that are not native to New Zealand

Place of first arrival

A seaport that has been approved under Section 37 of the Act as a place of first arrival for vessels and risk goods

3.3. Application

This standard applies to all vessels that enter New Zealand territory (NZT) after a voyage outside of NZT.

It DOES NOT apply to vessels that are passing through NZT on innocent or transit passage as defined in the United Nations Convention on Law of the Sea.

As per Section 17 of the Act, if possible and practicable to do so, the vessel must arrive in New Zealand at either:

01 a place of first arrival that has been approved by the Director-General as suitable for the vessel, type and the purpose for which it is arriving; or

02 a place for which special approval has been granted by the Director-General for a specified

03 vessel to arrive, or for vessels to arrive for a specified purpose, under Section 37A of the Act.

3.4. Vessel's categories

Short-stay vessels such as tankers, bulkers, containers and commercial cargo vessels**:**

01 staying in New Zealand for less than 28 days consecutive days from time of entry into New Zealand territory,

02 only visiting approved places of first arrival.

03 arrive in New Zealand with a 'clean hull'. A hull is considered to be a 'clean hull' when no biofouling of live organisms is present

If after arrival operator wants to extend the vessel's stay past 28 days, or visit places that are not places of first arrival, he must contact MPI as soon as possible and make the appropriate arrangements for meeting the requirements for long-stay vessels.

Long-stay vessels such as cruise vessels, yachts and other recreational vessels**:**

01 staying in New Zealand for 29 consecutive days or longer, or

02 visiting areas not approved as places of first arrival,

3.5. How to comply with biofouling requirements

New Zealand's biofouling requirements can be met by doing one of the following:

1. Undertaking continual hull maintenance using best practices.
2. Inspecting and, if necessary, cleaning the hull and niche areas within 30 days before arrival in New Zealand (recommended for long-stay vessels).
3. Booking an appointment for the vessel to be hauled out and cleaned by an MPI-approved treatment supplier within 24 hours of arrival (recommended for vessels coming to New Zealand for refit or repair).

3.6. How to avoid further delays from port congestion

1. Ensure you have a clean hull before your vessel leaves for New Zealand. A clean hull may reduce any additional biosecurity-related costs and delays, should unforeseen itinerary disruptions occur.
2. Get ahead of your biofouling: organise an underwater inspection and act on all biofouling found.
3. Ensure that your most recent underwater inspection or underwater cleaning report is supplied to MPI.
4. Ensure that all other relevant paperwork is supplied to MPI.
5. Let MPI know as soon as a delay becomes likely.
6. Reach out to MPI prior to departure for New Zealand if you are unsure of whether to carry out biofouling management, or to seek further advice.

3.7. Actions to be carried out prior vessel's departure for New Zealand

1. Vessel's Operator: submit the information below at MPI at least 48 hours prior to the vessel's entry into New Zealand territory:

01 Vessel's details:

- vessel name and IMO number;
- voyage number, if the vessel has one;
- vessel's registration number, if the vessel has one;
- radio call sign;
- vessel contact details;
- vessel type
- country and port of registration, if registered;
- name of the person in charge on board the vessel;
- name of the owner or charterer of the vessel;
- any previous names of the vessel; and
- agent's name and contact details, if applicable

02 Voyage details:

- estimated time of arrival (ETA) in New Zealand territory;
- ETA at place of first arrival in New Zealand;
- intended length of time in New Zealand territory;
- list of all the ports of call in New Zealand, with ETAs and estimated time of departures (ETDs) for each port after place of first arrival, if applicable;
- previous overseas ports and dates of calls for past 12 months;
- next overseas port after leaving New Zealand territory;
- any cargo onboard;
- any goods for landing by the crew and private equipment or belongings intended to be used ashore, if applicable;
- details of live animals kept on board as pets, if applicable;
- details of, and signs of, any pests on board;
- species of the Lymantria complex risk information: any risk areas visited in the 12 months immediately preceding the vessel's intended date for entry into New Zealand territory if that visit occurred during a risk period, any certificate showing freedom from species of the Lymantria complex held (showing time and date of inspection);
- whether or not the vessel has carried livestock, live farmed fish, or bulk grain in the previous months;
- whether or not the vessel undertakes regular pest management;
- whether or not the vessel has a GMP;
- whether or not the vessel has any wood packaging or dunnage on board; and
- whether or not the vessel has any meat and fresh produce on board that is not of New Zealand origin

03 Biofouling information:

- whether the vessel has spent any extended periods mainly stationary in a single location; and
- if the vessel is coming in to undergo biofouling cleaning on arrival, any arrangement for cleaning or treatment and whether they will be undertaken upon arrival (within 24 hours); and
- the measure listed below that will be applied to the vessels in order to meet the CRMS requirements:
  - **Continual maintenance using best practice**: Applicable to short-stay vessels only and includes:
    - application of antifouling coatings,
    - operation of MGPS and
    - in-water inspections with biofouling removal as required.
  - **Clean before arrival:** Inspect and if required, remove all biofouling found from all parts of the hull, including niche areas, less than 30 days before arrival to New Zealand.

- **Clean out of water on arrival:** Have a booking at a MPI approved haul-out facility to remove biofouling and enter this facility within 24 hours of arrival to New Zealand. Once in the facility, all biofouling from all parts of the hull, including niche areas are removed.
- **Treat on arrival:** All available approved treatments are listed in Approved Biosecurity Treatments (MPI-STD-ABTRT). This excludes the removal of biofouling in an approved haul-out facility

  Vessel's operator must provide relevant evidences of the measures above.

- or whether the operator or person in charge operates the vessel under an MPI-approved craft risk management plan as an alternative to meeting the requirements of the standard.

2. Following documents must be available onboard and provided to MPI upon request:

01	Information on the antifouling regime and any MGPS used
02	Current BFMP as per IMO Biofouling Guidelines & BFRB properly filled in
03	Latest IAFS Certificate or International Antifouling System Declaration
04	Latest vessel Biofouling Inspection Report (either conducted on land or in water) as per CRMS requirements
05	Dates and reports of dry docking
06	Vessel operational history
07	Evidence of ongoing maintenance (such as cleaning or treatment) by suitably qualified people.
08	evidence of independent inspections and ongoing maintenance (such as cleaning or treatment) by suitably qualified people.

Vessel's operator for long-stay vessels:

01	must obtain written confirmation from an inspector at a place of first arrival that the vessel meets the CRMS requirements before the vessel leaves the place of first arrival or otherwise within 28 consecutive days of entering New Zealand territory
02	The vessel is free of regulated pests and biosecurity contamination
03	Any risk goods have either: • been removed from the vessel through an approved process; or • received biosecurity clearance under the Act
04	The vessel has a "clean hull" as per CRMS requirements

3.8. Within New Zealand territory

Vessel's Operator must ensure that:

01 no risk goods (including food and garbage) are discharged overboard or otherwise leave the vessel other than for disposal by an approved system or for biosecurity clearance at a place of first arrival; and

02 all biosecurity contamination and other risk goods are secured on the vessel; and

03 no removal of biofouling from an international vessel is undertaken in New Zealand territory other than through use of an MPI-approved haul-out facility or MPI approved treatment

3.9. Craft Risk Management Plan

Vessel's Operator:

01 In case that the biofouling requirements have not been met via the below options, develop a Craft Risk Management Plan (CRMP) that details alternate but equivalent measures to manage biofouling:

- Best practices and/or developing a BFMP
- Cleaning prior to arrival, or
- Using an approved treatment.

02 Submit the CRMP to MPI for approval.

3.10. General Requirements

Vessel's operator must:

01 ensure that a vessel biofouling inspection provider, prior to any inspection, is provided with copies of the vessel schematics indicating niche area locations and docking plan (i.e. placement of dry-docking blocks); or

02 must discuss the arrangement with biofouling inspection provider to clarify the presence or absence and general locations of niche areas, if the documents cannot be obtained or are invalid. A record of either of the above must be kept; and

03 ensure that the vessel biofouling inspection meets the "capturing evidence" requirements; and

04 ensure that a vessel biofouling inspection report has been prepared upon inspection's completion, as per CRMS reporting requirements.

3.11. Capturing evidence

01 The evidence captured must be high-quality (a level that allows the viewer to identify biofouling to broad taxonomic groups (e.g. barnacles, tube worms, macroalgae)) digital video footage and

still photos of all locations on the hull as per Section 12 below, regardless of the presence or absence of biofouling.

02 Three photos and one video must be taken, no more than 0.5m from the hull, of each location, except for the locations listed under “miscellaneous” (see Section 12 below) where one photograph and one video is required for each location.

03 The digital cameras used for gathering the evidence must be capable of time and date stamping footage or photos (i.e. the correct date and time at which the photos were taken must be on the photos), or alternatively the time and date must be saved as properties associated with the file.

04 Each image or video must be labelled to identify the image’s location in relation to the hull during the inspection, e.g. labels on a quadrat frame.

05 Each video must be taken at a speed slow enough for the camera to operate in low-light conditions without blurring images in individual frames.

06 In low-visibility environments the vessel hull inspector must use adequate lighting and take additional photographs and footage of targeted areas to negate impacts on the quality of evidence.

07 All reasonable attempts must be taken to access and survey all submerged and relevant topside areas as thoroughly as possible.

08 Any locations on the hull that were not surveyed must be identified in the report as per the reporting requirements below, along with the reason they were not inspected.

3.12. Required locations for vessel biofouling inspections

Stern		Midship		Miscellaneous
Port	**Starboard**	**Port**	**Starboard**	Starboard anodes
Hull wind/water line	Hull wind/water line	Hull wind/water line	Hull wind/ water line	Port anodes
Hull vertical deep	Hull vertical deep	Hull vertical deep	Hull vertical deep	Stern anodes
Hull flat bottom	Hull flat bottom	Hull flat bottom	Hull flat bottom	Earthing plates
Dry-docking blocks	Dry-docking blocks	Dry-docking blocks	Dry-docking blocks	Echo sounder transducers
Sea chests, internal	Sea chests, internal	Sea chests, internal	Sea chests, internal	Speed log fairings
Sea chests' gratings	Sea chests' gratings	Sea chests' gratings	Sea chests' gratings	Port pipework/discharge pipes
Upper	**Lower**	Bilge keel	Bilge keel	Stbd. pipework/discharge pipes
Rudder trailing edge	Rudder trailing edge	**Bow**		**Specific to vessel type**
Rudder leading edge	Rudder leading edge	**Port**	**Starboard**	Moon pool
Rudder vertical hinge/post gap	Rudder vertical hinge/post gap	Hull wind/water line	Hull wind/water line	Port stabilisers
Rudder port flat side	Rudder port flat side	Hull vertical deep	Hull vertical deep	Starboard stabilisers
Rudder stbd. flat side	Rudder stbd. flat side	Hull flat bottom	Hull flat bottom	Port lateral thrusters
Rope guard, external	Rope guard, external	Dry-docking blocks	Dry-docking blocks	Starboard lateral thrusters
Rope guard, internal	Rope guard, internal	Sea chests, internal	Sea chests, internal	Stern roller
Rudder top	Rudder bottom	Sea chests' gratings	Sea chests' gratings	Box cooler chest gratings
Stern tube	Stern arch	Bow thruster grating	Bow thruster grating	Box cooler chest internal
Rudder stock		Bow thruster tunnel	Bow thruster tunnel	
Rudder post/pintle		Bow thruster blades		
Rudder horizontal hinge/post gap		Bow thruster boss cone		
Propeller blades – forward side		Bow thruster rope guard, external		
Propeller blades – aft side		Bow thruster rope guard, internal		
Propeller boss		Bulbous bow - upper		
Propeller shaft		Bulbous bow - lower		

3.13. Reporting

Vessel's operator:

1. must submit to MPI, when required unless otherwise instructed by an MPI inspector a report in PDF format including the following:

01 A signed and completed vessel checklist and reporting form containing the following information:

- Date and location of inspection, vessel name, IMO number, vessel type, inspection personnel, weather conditions, water visibility, number of images supplied, and number of videos supplied
- A list of each required location as per Section 12 with the following information accompanying each location:
    - Confirmation of required evidence being gathered.
    - Range (minimum and maximum) of biofouling scores and description of the scoring system used.
    - Description of broad taxonomic groups present (e.g. barnacles, tube worms, macroalgae).

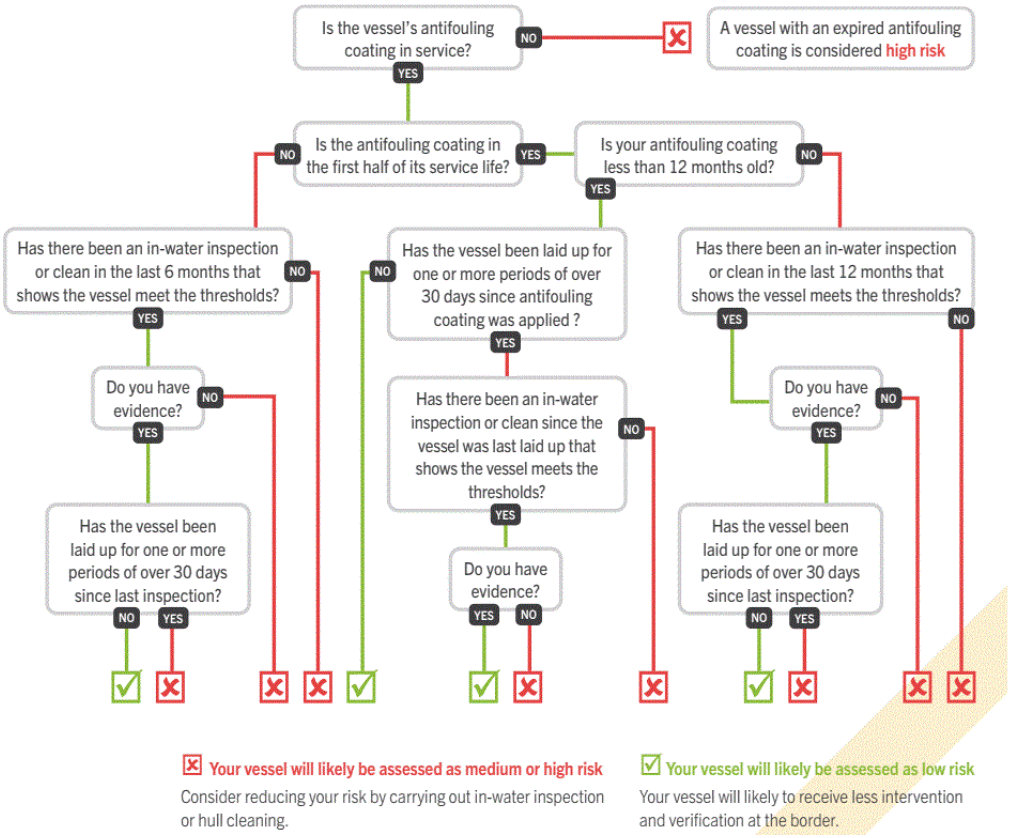
02 A minimum of one representative image of each required location (as per Section 12) that are of a size and quality which enables the viewer to identify biofouling to broad taxonomic groups (e.g. barnacles, tube worms, macroalgae). The representative image for each area must show the maximum level of fouling

2. Must ensure that the following will be available to MPI if requested:

- all video footage of each location in Schedule 3 that are clearly filed and labelled; and
- inspection plan outlining key locations identified for hull and niche areas, crew members consulted, and any other documents acquired for the planning process, e.g. vessel schematics, docking plan and internal seawater system schematics.

3.14. Self-assessment tool for biofouling

The risk of a vessel being fouled depends on a combination of indicators. MPI uses these indicators to assess the risk a vessel may pose. The flow chart below is a generic overview of the risk assessment



process for vessels arriving to New Zealand.

Follow the flow chart to self-assess your vessel. This information is guidance only and does not constitute, and should not be regarded as, legal advice.

VESSEL CHECKLIST AND REPORTING FORM		
Ship name: **IMO number:** **Vessel type:** **Date:**	**Lead vessel hull inspector:** **Personnel involved:** **General Arrangement obtained:** Yes No	**Inspection location:** *Name of anchorage or Latitude and Longitude (if offshore).* **Weather conditions:** **Visibility:**
Number of photos supplied to MPI:	**Number of videos supplied to MPI:**	**Supplied via (circle one):** **Email** **MPI share file** **Secure drive**

Area	Description (Blank rows are for adding opportunistic observations)	Location found? (Y/N)	Images taken (3 minimum) (Y/N)	Video completed (Y/N)	Mode level of fouling[1] (Floerl et al. 2005)	Range (min–max) of level of fouling[4] (Floerl et al. 2005).	Description and biofouling taxa observed (e.g. slime, macroalgae, barnacles, bivalves, bryozoans, sea squirts, tubeworms)	Condition of antifouling coating (good, fair, damaged, depleted)
(Example row) Stern	***Rudder vertical hinge/post gap - upper***	***Y***	***Y***	***Y***	***3***	***2-5***	***Barnacles, bryozoans, macroalgae, oysters***	***damaged***
Stern	Hull stbd wind and water line							
Stern	Hull stbd vertical deep							
Stern	Hull stbd flat-bottom							
Stern	Hull port flat-bottom							

[4] See section 5.3: Level of fouling (LOF) ranks

Area	Description (Blank rows are for adding opportunistic observations)	Location found? (Y/N)	Images taken (3 minimum) (Y/N)	Video completed (Y/N)	Mode level of fouling[1] (Floerl et al. 2005)	Range (min–max) of level of fouling[4] (Floerl et al. 2005).	Description and biofouling taxa observed (e.g. slime, macroalgae, barnacles, bivalves, bryozoans, sea squirts, tubeworms)	Condition of antifouling coating (good, fair, damaged, depleted)
Stern	Hull port vertical deep							
Stern	Hull port wind and water line							
Stern	Port dry-docking blocks/support strips							
Stern	Stbd dry-docking blocks/support strips							
Stern	Rudder trailing edge - upper							
Stern	Rudder leading edge - upper							
Stern	Rudder vertical hinge/post gap – upper							
Stern	Rudder horizontal hinge/post gap							

Area	Description (Blank rows are for adding opportunistic observations)	Location found? (Y/N)	Images taken (3 minimum) (Y/N)	Video completed (Y/N)	Mode level of fouling[1] (Floerl et al. 2005)	Range (min–max) of level of fouling[4] (Floerl et al. 2005).	Description and biofouling taxa observed (e.g. slime, macroalgae, barnacles, bivalves, bryozoans, sea squirts, tubeworms)	Condition of antifouling coating (good, fair, damaged, depleted)
Stern	Rudder top edge							
Stern	Rudder port flat side - upper							
Stern	Rudder stbd. flat side - upper							
Stern	Rudder stock							
Stern	Rudder post/pintle							
Stern	Rudder trailing edge - lower							
Stern	Rudder leading edge - lower							
Stern	Rudder vertical hinge/post gap - lower							
Stern	Rudder port flat side - lower							
Stern	Rudder stbd flat side - lower							

Area	Description (Blank rows are for adding opportunistic observations)	Location found? (Y/N)	Images taken (3 minimum) (Y/N)	Video completed (Y/N)	Mode level of fouling[1] (Floerl et al. 2005)	Range (min–max) of level of fouling[4] (Floerl et al. 2005).	Description and biofouling taxa observed (e.g. slime, macroalgae, barnacles, bivalves, bryozoans, sea squirts, tubeworms)	Condition of antifouling coating (good, fair, damaged, depleted)
Stern	Rudder bottom edge							
Stern	Propeller blades – forward side							
Stern	Propeller blades – aft side							
Stern	Propeller boss							
Stern	Propeller shaft							
Stern	Rope guard external - upper							
Stern	Rope guard external - lower							
Stern	Rope guard internal - upper							
Stern	Roper guard internal - lower							
Stern	Stern tube							
Stern	Stern arch							
Stern	Port sea chest gratings							

Area	Description (Blank rows are for adding opportunistic observations)	Location found? (Y/N)	Images taken (3 minimum) (Y/N)	Video completed (Y/N)	Mode level of fouling[1] (Floerl et al. 2005)	Range (min–max) of level of fouling[4] (Floerl et al. 2005).	Description and biofouling taxa observed (e.g. slime, macroalgae, barnacles, bivalves, bryozoans, sea squirts, tubeworms)	Condition of antifouling coating (good, fair, damaged, depleted)
Stern	Port sea chest internal cavity							
Stern	Stbd sea chest external grating							
Stern	Stbd sea chest internal cavity							
Midship	Hull stbd wind and water line							
Midship	Hull stbd vertical deep							
Midship	Hull stbd flat-bottom							
Midship	Hull port flat-bottom							
Midship	Hull port vertical deep							
Midship	Hull port wind and water line							
Midship	Port dry-docking blocks/support strips							

Area	Description (Blank rows are for adding opportunistic observations)	Location found? (Y/N)	Images taken (3 minimum) (Y/N)	Video completed (Y/N)	Mode level of fouling[1] (Floerl et al. 2005)	Range (min–max) of level of fouling[4] (Floerl et al. 2005).	Description and biofouling taxa observed (e.g. slime, macroalgae, barnacles, bivalves, bryozoans, sea squirts, tubeworms)	Condition of antifouling coating (good, fair, damaged, depleted)
Midship	Stbd dry-docking blocks/support strips							
Midship	Stbd bilge keel							
Midship	Port bilge keel							
Midship	Port sea chest gratings							
Midship	Port sea chest internal cavity							
Midship	Stbd sea chest grating							
Midship	Stbd sea chest internal cavity							
Bow	Hull stbd wind and water line							
Bow	Hull stbd vertical deep							
Bow	Hull stbd flat-bottom							

Area	Description (Blank rows are for adding opportunistic observations)	Location found? (Y/N)	Images taken (3 minimum) (Y/N)	Video completed (Y/N)	Mode level of fouling[1] (Floerl et al. 2005)	Range (min–max) of level of fouling[4] (Floerl et al. 2005).	Description and biofouling taxa observed (e.g. slime, macroalgae, barnacles, bivalves, bryozoans, sea squirts, tubeworms)	Condition of antifouling coating (good, fair, damaged, depleted)
Bow	Hull port flat-bottom							
Bow	Hull port vertical deep							
Bow	Hull port wind and water line							
Bow	Port dry-docking blocks/support strips							
Bow	Stbd dry-docking blocks/support strips							
Bow	Port bow thruster grating							
Bow	Stbd bow thruster grating							
Bow	Port bow thruster tunnel							
Bow	Stbd. bow thruster tunnel							

Area	Description (Blank rows are for adding opportunistic observations)	Location found? (Y/N)	Images taken (3 minimum) (Y/N)	Video completed (Y/N)	Mode level of fouling[1] (Floerl et al. 2005)	Range (min–max) of level of fouling[4] (Floerl et al. 2005).	Description and biofouling taxa observed (e.g. slime, macroalgae, barnacles, bivalves, bryozoans, sea squirts, tubeworms)	Condition of antifouling coating (good, fair, damaged, depleted)
Bow	Bow thruster blades							
Bow	Bow thruster boss cone							
Bow	Bow thruster rope guard external							
Bow	Bow thruster rope guard internal							
Bow	Stbd sea chest gratings							
Bow	Stbd sea chest internal cavity							
Bow	Port sea chest grating							
Bow	Port sea chest internal cavity							
Bow	Bulbous bow - upper							

Area	Description (Blank rows are for adding opportunistic observations)	Location found? (Y/N)	Images taken (3 minimum) (Y/N)	Video completed (Y/N)	Mode level of fouling[1] (Floerl et al. 2005)	Range (min–max) of level of fouling[4] (Floerl et al. 2005).	Description and biofouling taxa observed (e.g. slime, macroalgae, barnacles, bivalves, bryozoans, sea squirts, tubeworms)	Condition of antifouling coating (good, fair, damaged, depleted)
Bow	Bulbous bow - lower							
Sacrificial anodes/ impressed current blocks/ earthing plates	Stbd anodes/impressed current blocks							
	Port anodes/impressed current blocks							
	Propellers/steering gear anodes/impressed current blocks							
	Earthing plates							
Sounder and speed log	Echo sounder transducers							
	Speed log fairings							
Internal sea water	Port pipework/discharge pipes							

Area	Description (Blank rows are for adding opportunistic observations)	Location found? (Y/N)	Images taken (3 minimum) (Y/N)	Video completed (Y/N)	Mode level of fouling[1] (Floerl et al. 2005)	Range (min–max) of level of fouling[4] (Floerl et al. 2005).	Description and biofouling taxa observed (e.g. slime, macroalgae, barnacles, bivalves, bryozoans, sea squirts, tubeworms)	Condition of antifouling coating (good, fair, damaged, depleted)
systems and bilge spaces	Stbd. pipework/discharge pipes							

OUTCOME OF VESSEL SURVEY
Based on the observations made by the vessel hull inspector (NAME) _____, the vessel (NAME) _____, (IMO NUMBER) _____has been surveyed according to the MPI minimum evidence requirements for vessel biofouling inspections. **Vessel hull areas of concern fouling include (as applicable):** **Reasons for specified vessel hull areas excluded from inspection (if applicable):** **Number of photo and video files to be provided to MPI:** **Completed by:**_____ **of** _____ **Signature**:_____ Date ____/___/_____ **Vessel representative/delegate**:_____

4. BRAZIL

4.1. Application

The requirements of NORMAM-401/DPC apply to any vessel larger than 24 meters in length when in Brazilian jurisdictional waters.

4.2. Exemptions

The following vessels are excluded:

01 Brazilian Navy vessels or any other vessel owned or operated by a State for non-commercial government service;

02 vessels that have not entered other jurisdictional waters since their last dry-docking, provided they are not in a “specific situation”;

03 oil and gas platforms undergoing an environmental licensing process, as well as other ships supporting these activities that are included in the license.

These vessels must take measures to prevent the discharge of harmful residual substances into the environment as per Annex G of NORMAM-401/DPC.

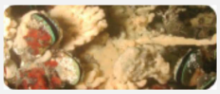
4.3. Requirements

If the vessel intends to enter Brazilian waters or navigate through different biogeographic regions (whether is underway, anchored, or laid up within), must:

01 have the current ship-specific BFMP available onboard and

02 properly maintain both parts of Biofouling Record Book (BFRB)

03 assess the extent of fouling on inspection areas as per table below

Rating	Description	Surface coverage	Action required
 0. No fouling	Surface entirely clean. No visible biofouling.	-	-
 1. Microfouling	Submerged areas partially or entirely covered in microfouling. Metal and painted surfaces may be visible beneath the fouling.	≤ 1%	Proactive cleaning may be recommended.
 2. Light macrofouling	Presence of microfouling and multiple macrofouling patches. Fouling species cannot be easily wiped off by hand.	1% to 15%	Cleaning with capture is recommended.
 3. Medium macrofouling	Presence of microfouling and multiple macrofouling patches.	16% to 40%	It is recommended to shorten the interval until the next inspection. If the anti-fouling system (AFS) is significantly deteriorated, dry-docking with maintenance and reapplication of the AFS is recommended.
 4. Heavy macrofouling	Large patches or submerged areas entirely covered in macrofouling.	41% to 100%	

04 maintain a biofouling rating equal to or lower than 1

Table: Rating scale to assess the extent of fouling on inspection areas

4.4. Cleaning

If the biofouling rating is 2 or higher, cleaning of hull and niche areas either in water or in dry dock must be conducted before transit unless there are exceptional circumstances or the competent authority decides otherwise. Relevant records shall be properly kept onboard.

Reactive in-water cleaning of hulls and niche areas should only be performed with capture of waste substances and upon the approval from the relevant authorities.

In case that a reactive in-water cleaning is required, ask permission from the local Maritime Authority Agent with a minimum 10 days advance notice by submitting the Cleaning Request Form together with the following documents:

01 International AFS Certificate / AFS declaration and methodology suggested by the manufacturer for removing biofouling, when applicable;

02 Biofouling Management Plan and Biofouling Record Book;

03 Chronological history of ports called since the last cleaning, when available;

04 Latest inspection report of the hull/niche areas with clear and high-resolution images, if applicable;

05 Biofouling removal plan detailing the team involved, methodology, equipment, waste capture rate, and the location where the proposed operation will take place;

06 Any additional information relevant with biofouling.

4.5. Exceptional situations

The following circumstances allow for bypassing the regulations:

01 Situations of force majeure or emergencies that are necessary to protect human life or ensure the safety of the ship;

02 Instances where compliance with requirements for a “specific situation” can be waived to guarantee the safety of the vessel and the people on board in an emergency or to save human lives at sea;

03 Unintentional release of biofouling substances into the environment following an incident, accident or a fact of navigation.

The local maritime authority must be promptly notified in case of any situation above.

REQUEST FOR IN-WATER CLEANING

1. General information	
Vessel's name/Call sign/IMO number/Flag	
Vessel's Shipowner/Company/Agent	Name/e-mail
Hull Cleaning Contractor	Name/e-mail
Place where the activity is going to be carried out:	
Proposed period to carry out the cleaning:	

2. Vessel's information	
Vessel typical route of operation ☐ Domestic ☐Transoceanic ☐International coastal ☐Other, please specify:	
Vessel typical speed (knot):	
Vessel typical port residence time (hours or days):	
Date of previous dry-docking	day/month/year:
Date of next dry-docking	day/month/year:
Areas of the vessel to be cleaned ☐ Hull ☐ Niche areas, please specify:	
Last date of AFC application	day/month/year:
Level of biofouling (according to the scale provided in Annex J) and estimated amount of cover (%):	

3. Primary coating information		
AFS general condition ☐ poor ☐ moderate ☐ satisfactory		
Manufacturer	Type/name of commercial product	Primary biocidal compound (if any)
Date of application	Remaining service life (in months)	Did most recent inspection find the coating in good condition? ☐ Yes ☐No
Area of application ☐ Whole hull ☐ Other, please specify:	Does the ship have more than one coating? ☐ Yes ☐No	Details of secondary coating (if any):

4. Vessel's documents	
Date of emission of the AFS Certificate or declaration (dd/mm/yyyy):	
Biofouling Management Plan	☐ Yes ☐ No If yes, date of implementation (dd/mm/yyyy):

Biofouling Record Book	☐ Yes ☐ No If yes, date of implementation (dd/mm/yyyy):
Other documents ☐ Last hull/niche areas inspection report ☐ List of the previous 10 ports visited ☐ Other, please specify:	

5. Methodology to be used for cleaning

General description	☐ Diving ☐ Autonomous (e.g. ROV) ☐ Other technique, specify:
Equipment, when used (name and manufacturer)	
Cleaning waste containment	☐ Capture ☐ No capture authorized by competent authorities:
Waste final destination	☐ Within the harbor area: ☐ Authorized / licensed third-part service:

6. Request responsible person's declaration

I certify that the information listed is true and correct.

Vessel's responsible person / Service provider's responsible person's name	Signature	Date
Email:	Phone number:	

7. Maritime Authority

☐ Cleaning request satisfies NORMAM-401, Chapter 4
☐ Cleaning request needs more details

Notes: (Any additional conditions with regards to the cleaning activity and/or additional requirements to be submitted)

Name of relevant authority	Name/signature of staff	
Job title	Signature	Date

APPENDIX V – RELEVANT INFORMATION

The following information related to this plan is attached:

No.	Title	Dwg. / Cert. No.
1.	General Arrangement Plan	F-15001
2.	Docking Plan	CC-12102
3.	Diagram of Ballast Water System	CF-13021
4.	Diagram of Sea Water Cooling System	CF-13521
5.	Painting Specification / AFS Maker's Certificates / AFS Maker's Drydock Report	-
6.	AFS Certificate (incl. Record)	CF-13021

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