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# MV GAS XXXXXXXXXX

## PRE-PURCHASE CONDITION ASSESSMENT

### PART A: SUMMARY REPORT

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LPG CARRIER (IMO 99999999)



Pre- Purchase Inspection Carried Out on 17<sup>th</sup> September 2018 at **Singapore Anchorage**

# SINOTECH MARINE CONSULTING

Safeguarding Your Shipping Investment

ISO 9001 :2015 Certified

MV GAS XXXXXXXXX

PRE-PURCHASE CONDITION ASSESSMENT

PART A: SUMMARY REPORT

## NOTES TO READER

This condition assessment report has been prepared and issued by SINOTECH Marine Hong Kong for the sole use of the SINOTECH Marine's Customer. The purpose of this report is to offer an independent evaluation of the condition of the subject vessel, as found during the superficial Inspection of the vessel and in the independent opinion of the attending Surveyor/Inspector. The report is subject to any restrictions applied to the access of information, vessel areas, and/or records as described here in the report, and it is also subjected to the level of cooperation extended by the Ship Crew to the surveyor during the inspection. All details are given in good faith, and without guarantee. This report has been prepared and issued by SINOTECH Marine Corporation Hong Kong Ltd. to its Customers in accordance with the SINOTECH Standard Terms and Conditions which are available on our website [www.sinotechmarine.com](http://www.sinotechmarine.com).

## SINOTECH MARINE REPORTS PART A – An Executive Summary

The Purpose of this part of the report is to provide the Client an Overview of the vessel condition. This section include SINOTECH Marine grading of the vessel condition, highlight key areas of concerns, major vessel defects, scope of further improvement, and positive aspects of vessel design, features, equipment, machineries and any other benefit or advantage of the vessel.

## PART B – Detailed Condition Evaluation Report

This part of the report provides detailed information on the vessel particulars, condition of the vessel various areas, visible part of the hull & shell plating, superstructure, machineries, equipment and outfitting on-board a vessel. In this part, evaluation of the condition of the various parts of the vessel is reflected on a scale of 1 to 4. 1 is considered poor and 4 as excellent.

## PART C - Vessel Type Specific Condition Assessment

This section provides a ship-type specific condition evaluation of specific areas or equipment or machineries of the ship. This part covers cargo storage, cargo gears, hull & structure, and related machineries, systems and controls.

## Safeguarding Your Shipping Investment

MV GAS XXXXXXXX

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PART A: SUMMARY REPORT

## EXECUTIVE SUMMARY

**LPG Gas XXXXXXXX** is a fully pressurized small size Gas carrier under Lloyd's Register Classification designed to carry Propane, Butane, LPG, Butylene, Butadiene and VCM built as Silver Dream by Fukuoka Shipbuilding Co. Ltd and delivered on 24 January 1997. Vessel is manned by Filipino officers & crew under the Technical Management of Brave Maritime Corporation Inc, Greece.

We attended the vessel on 17th Sep 2018 while she lay safely afloat at Sudong Special Purpose anchorage, Singapore waiting to load cargo from Mipa, Indonesia to access the vessel pre-purchase condition. The vessel is built to good standards at a reputed Japanese Shipyard and now seen with a few minor exceptions. In general, the vessel overall condition is Fair condition and in line with vessels of that age. Vessel is well designed with machineries and equipment are from well-known and reputable manufacturers with service world-wide. No evident deficiencies or larger damages of the Structure were noticed during the above Inspection of the vessel. Though, there is obvious wear and tear from areas of operation considering her 20+ years of age. Last docking was done in 5 Aug 2017 and the next drydocking is due 05 Aug 2022 with no condition of class. Vessel has a list of Memo narratives, key one being confirmation of Ballast Water Management system installation and Marpol Annex 6 Emission regulation to be met before next renewal of ISPP. The ship is equipped with 2 C type independent tanks designated as type 2 PG. Each tank is supported by two saddles. Both are installed in the same hold. Weather tight sealing arrangement between the tank and the hatch coaming is provided for each tank. The dome for connection of the tank with piping is fitted on the tank. Cargo handling is locally provided with start/Stop control. Ship has continuous main deck, bulbous bow, aft engine, single screw and single rudder. The vessel is powered by MAKITA MITSUI MAN B+W 7526MC engine with an output of 3242PS AT 237 RPM.

### Estimated Cost of Upgradation

BWTS - US\$300,000

Additional Maintenance – US\$ 103,000

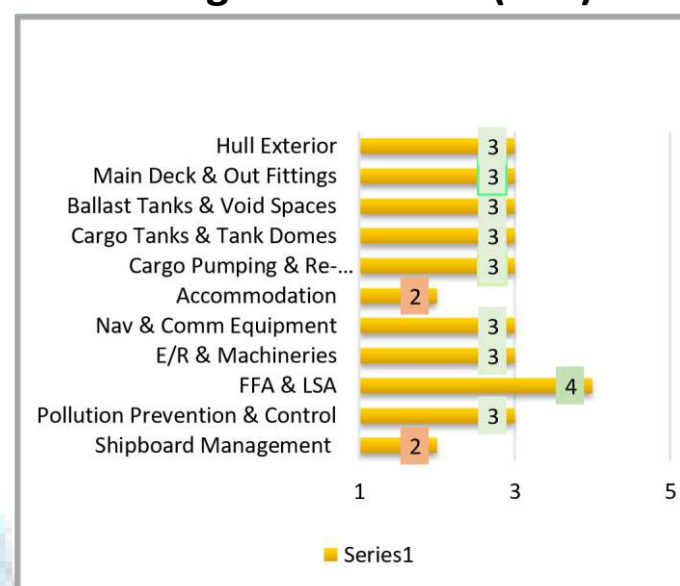
**Total US\$403,000**



### Description of the Grades

1 (unsatisfactory)	Condition of inadequate strength or operational efficiency. Immediate extensive repair or renewal required to restore vessel serviceability.
2 (Poor)	Significant defect or damage present that require remedial action.
3 (Fair)	Obvious wear & tear, and other moderate deficiencies, require some level of corrective actions or repair works
4 (Good)	Non-significant wear & tear or minor defect, no immediate corrective action required
5 (Very Good)	Unimpaired condition without wear or deviation from original strength or operating efficiency

**Average Grade 3.2 (Fair)**



## Vessel Principal Particulars

Ship's Name	Gas XXXXXXXX
IMO Number	99999999
Vessel Type	
Classification Society	
Class notations	100A1, LIQUIFIED GAS CARRIER, SHIP TYPE 2 PG,
GRT	4402 MT
Summer DWT	3800 MT
Last docking	14 July 2017
Last Class Special Survey	07/17
Flag/Port of Registry	Marshall island
Yard	Fukuoka Shipbuilding Co. Ltd
Date Delivered	24 January 1997
Builder	Fukuoka Shipbuilding Co. Ltd
Registered Owner	Empire Spirit Limited
Charterer	Brave Maritime Corp Inc
ISM Managers	Brave Maritime Corp Inc
Main Engine type	MAKITA MITSUI MAN B+W 7526MC

Power rating	3815 PS AT 250 RPM
Cylinder Lubricator Type	Mechanical Lubricator
No of Aux Engines	2
Boiler: Make & Type	Tortoise Engineering, MKSC 14-600/350
Rating /Capacity	Max Design : 10.5 bar. Evaporation 600 kg/hr, 6 kg/sqc.
Shaft/Turbine alternator	Not Applicable
Bow Thrusters	Not Applicable
Ballast water treatment system	Not Applicable
Type of Propeller	Fixed pitch propeller
Hose Gears: Make	
Capacity	300 cum/hr. (sg 0.600) 250 cum/hr. (sg 0.946)
No's of Cargo Tanks	2
Total cargo Capacity	5000 cum
ECDISC: Make & Type	Maris 900
Automation Level	Bare Minimum
No of Crew	17
IGS/IGG	Not Available

GAS XXXXXXXX

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Critical Defect

Urgent Remedial  
Action Required



Significant Defect

May lead to a high  
future cost



Minor Defect, low cost

defect, could be an  
Industry  
recommendation



A good Design or

operational feature  
of the ship.

## Areas of Concerns, Recommendations & Features

	Description	Action-Timeline	Approx. Cost
	Installation of BWTS to comply with new Ballast Water Treatment Regulation	08/09/2024	\$ 300,000
	Missing Accommodation ladder	20/12/2018	\$35,000
	Oily Mist Detector for M/E	20/12/2018	\$10,000
	Winch break lining Maintenance	Earliest	\$2000
	Emergency Fire pump Overhaul.	20/10/2018	\$1500
	Cleaning of Air con evaporator as Air conditioning is not effective	20/12/2018	\$6000
	Accommodation Cosmetic Upgradation	Next Docking	\$5000
	Annex 6 Requirement Compliance of using light fuels	To be analyzed	\$30,000
			\$403,000



## Vessel Condition Summary

### Speed & Fuel Consumption Data

SPEED/LOAD	CONDITION	LOG ABSTRACT		CHARTER PARTY	
		FO	DO	FO	DO
10.5	Ballast	6.80 MT	0.86MT	0	MT
10.0	Loaded	7.15 mt	0.82 MT	0	MT
	Idle at Port		MT	0	MT
	Active at Port	mt	MT	0	MT

Comments – Ship had done a speed of 10 to 10.5 knots only past 3 months. We suspect vessel is underperforming. Master and Chief Engineer did not share/ speed/rpm fuel consumption as per the managers instructions.

### Lubricating Oil Consumption

*Avg. Daily Cylinder LO Consumption – 140 Liters per Day*

*Avg. Daily Main Engine Sump LO Consumption - 20 Liters per Day*

*Avg. Generator Lube Oil Consumption – 4 Liters per Day*

If Alpha Lubricators fitted, then what is alpha lubricator setting?-There is no Alpha Lubricator.

### Class Status

CLASS NAME	LLOYD'S REGISTER
LAST CLASS REPORT	Dated 05 July 2018
CURRENT CONDITION OF CLASS	None/ Annual Surveys are due
CURRENT MEMORANDA OF CLASS	Ballast water pant & Marpol Annex 6 compliance. All other narratives are for information purpose
SURVEYOR'S COMMENTS	Dated 05 July 2018

## Ultrasonic Thickness Gauging Result

REPORT ABSTRACT

UT Gauging report not Shown

### Hull Externals

Rib caging was noted on the aft portion both sides in between transverses. Fender marks were visible on either side. Draft and load line marks found fair. There was no visible damage, dent, crack, or any kind of deformation on the visible part of the external hull except as described above. Hull fouling was noted below 4 m draft and one could expect speed improvement after cleaning. Scattered rust patches along the weld seams noted on Topside & vertical portion.

Starboard anchor was stowed in place correctly and port anchor was down. Fender black patches were noted below the name in the bow. Also, similar fender black patches noted in the aft quarter port & starboard side. We could not see the Rudder and propeller as was under water.

### Main Deck

Main deck coating in general looked fair with widespread rust spots. Coating over pitting scabs noted all over main deck though none of them were very deep. Railing appeared well painted. Condition of the watertight doors , forepeak stores appeared fair.

### Forecastle Deck & Poop Deck

Condition of mooring equipment, windlass, winches machineries, appeared in order and reported working well. Brake drum edges for the winches were noted with thick rust. Some of the exposed brake drum portions noted rusted. We did notice some snap back zone marking. We did not notice any Hydraulic leak. Rust stains were noted around anchor chain and windlass on the Forecastle deck.

### Deck Out Fitting and Cargo Gears

Hydraulic piping found free of leaks. Roller fairleads & Fairlead bases noted to have rust patches. Condition of Bunker Manifold, one on each side found fair. - Condition of lifeboat davits and cranes found fair. Vessel does not have Port Accommodation ladder.

### Cargo Tanks & Tank Domes

Vessel has been carrying Butane past one year. Master was not willing to share any pictures or repots as per the instruction the Mangers. There was no cargo operation during our inspection. Vessel is not fitted with any IG system. Condition of the cargo piping and fittings, relief valves, valves, flanges, support brackets, clamps, nuts and bolts appeared fair. Manifold piping, attachments and valves found to have spot rust.

### Cargo Pumping and Re-Liquification Plant

There are two Deep well 4 stage Electric Shinko made cargo pumps, one for each tank near the aft end. Capacity of each pump is 300 cum/hr. (sg 0.600) at 110 m water column and 250 cum/hr. (sg 0.946) at 120 m water column.

Cargo compressors were not running but appeared to be well maintained. No leakage observed from both bulkhead stuffing box and compressor shaft seal. Compressor room and motor room were maintained in clean condition.

Due to limited access to running record and maintenance as ship's Master did not allow, more technical details are not available. All local gauging instruments were apparently found in normal condition. All the Controls are essentially local.

### Ballast Tanks and Void Spaces

No1 Hold space: Bottom portion found to widespread sport rust. Some steam line insulations found adrift. Saddle wooden chokes for the tank support appeared in order. Paint work on tank noted rusted. No2 Hold space: Bottom portion found to widespread



sport rust. Saddle wooden chokes for the tank support appeared in order. Paint work on tank top is noted rusted extensively.

No2 Void space: Bottom part extensively rusted. All other parts in good condition. We could see the coal tar epoxy intact in many areas touched up with Grey epoxy. No1 Port tank: Anodes consumed about 50%.Spot rust on the stringers, handrails, rail supports noted. .Edge rust noted on ladders, transverses & longitudinal. Tank in fair condition.

Aft peak tank: Severe rusting noted in underdecks. On the whole rusting noted for about 25 %. Both Port & STBD aft peak tank would require maintenance as priority.

## Accommodation

The vessel has Japanese type accommodation. Only the Master and Chief engineer have attached bath & toilet. All others have common bath and toilet facilities. We have seen drums and buckets with water filled in laundry & bath areas and foul odor which indicates water rationing on-board. On top of that, the water consumption was indicated as 1 t/day. When we commented that that is too low, then they reverted as 1 to 2 t/day. Chief engineer reported Fresh water production as 5 t/day and we remember seeing in the log much lesser production (1t/day) Chief office advised that the vessel took fresh water 100 tons just two days prior to our inspection. The air condition system is not effective, and the owners may land up investing on the compressor & Evaporator.

## Navigation and Communication System

It was reported that all the Navigation and communication equipment's are fully operation. We had suspicion in one of the Radars operations as this unit has two serial numbers. Later, we saw a new unit supplied to the vessel. Hence, whatever is reported by the officers cannot be taken as true. ECDIS units are made by Maris 900. We have seen both units operational. However, the second officer could not demonstrate the way points during Singapore approach in ECDIS. In general, for this age of the vessel, the Navigation equipment maintenance cost runs very high unless replaced.

## Life Saving Appliances

Lifesaving appliances provided for 24 persons. Vessel is provided with totally enclosed Lifeboats for 25 persons on Port & STBD side. There are two life rafts each 25 person's

capacity on either side. All of them appeared well maintained. All other Lifesaving appliances in addition to the above appeared well maintained

### Fire-fighting Appliances

Vessel is provided with CO2 system made by Kawasaki for engine room and Compressor room fire protection. CO2 room is in Engine room. Vessel has dry powder protection system for the cargo area. Vessel has water spray nozzles to cover exposed area of cargo tanks & cargo manifold. Vessel is also arranged with Sprinkler system with small holes in pipes for each cargo tank. All of them appear to be in order.

### Engine Room & Machineries

Main engine type Makita Mitsui MAN B & W 7S26 MC Mark V

Maximum output 3815 PS X 250 rpm

Normal output 3242 PS X 237 rpm (85 % MCR)

Engine room is small and maintained in fair status and the engine externally appeared to be satisfactory with no significant leakages of fuel or lube or cooling water. As per the records, all the units were decarbonized in the month of July to August 2018. We do not know the reason for such rapid overhauls. From the liner wear data, it appears as though no5 & no7 liners were renewed. But we had seen seven old spare liners in the Engine room. Buyers to take up this with sellers. Secondly, ME has some higher level of vibration in the intermediate shaft known from the Class survey report which could be one reason for not running Engine at Full RPM.

Main engine performance record dated 24 Aug 2018 on a loaded passage sighted. Main engine was run on 235 rpm. The Exhaust temperatures were in the range of 325 to 350 Deg. C. Fuel consumption was 8.9 t/day. Cylinder oil consumption is 90 liter/day & crankcase oil consumption is recorded as 12 lt./day which is normal. Ships speed 12.86 knots. There is no power calculation provided and neither the sea trial data to estimate the power. We have noted in the logbook that Main engine was run on 175 to 185 rpm. Chief engineer pointed out that Main engine runs on 50 % or at a lower power. According to engine room logbook, vessel daily fuel consumption in Laden Condition was about 7.85 MT of 380 CST fuel for Main engine & 0.82 MT of Diesel oil for Main engine revolution of 188.5 rpm. We could see the related ships speed. **But**

***ships deck log indicated that the vessel has not done more than 10.5 to 11.0 knots. This does not meet C form (charter party) specifications. This detail to be further verified as ship staff was reluctant to show any voyage abstract.***

Average daily cylinder oil consumption was about 165 liters with gravity tank for 195 rpm. Main engine crank case consumption is 20 lts /day and aux engine Lube oil consumption is 5 lts/day/engine.

Form C Charter party declaration is as follows:

**Speed in Laden/Ballast voyages:** (Up to Beaufort scale 4 and Douglas Sea 3).

Normal service speed About 12.0 knots Eco speed (min RPM Blower will not start) About 11.0 KTS.

### Consumption

1. Normal service speed : **About 12.0 KTS**  
 2. Eco speed (min RPM Blower will not start) : **About 11.0 KTS**

#### CONSUMPTION / DAY

##### 1. NORMAL SERVICE SPEED

	Ballast		Laden
Main Engine	HFO : About 9.0 MT	/	HFO About 9.5 MT
Auxiliary Engine	MGO : About 0.7 MT	/	MGO About 0.7 MT

##### 2. ECO SPEED (min RPM Blower will not start)

Main Engine	HFO : About 6.5 MT	/	HFO About 7.0 MT
Auxiliary Engine	MGO : About 0.7 MT	/	MGO About 0.7 MT

In port - idle/Loading (including Boiler) : **HFO About 0.5 MT / MGO About 1.2 MT**

In port - discharging with 2 cargo pumps : **HFO About 0.5 MT / MGO About 1.7 MT**

Is the Main engine capable of producing 12.86 knots for a consumption of 8.9 t/day as per the performance records? We have our doubts. The Main engine cannot perform as per declaration in form C for charterers. Auxiliary engine performances were recorded at 65% power. Exhaust temperatures were shown in the range of 190 to 205 Deg c. The exhaust temperatures are indeed so low. We did see some metal exposure close to auxiliary engine Turbochargers which is a fire hazard and SOLAS violation. Some water and Diesel noted below the Auxiliary engine close to the flywheel. Engine room tank top and bilges were found rusted. Most of the Sea water pumps are gland packed with leaks around, Pump foundations are thickly rusted and coated with paint.

Overall housekeeping in ER is in fair condition. We noted lot of soot on the motor suction grids. There is no Crankcase Mist detector for the Main Engine.

Machineries	Total Running Hours
Main Engine	88,455
AE 1	90,009
AE2	88,230
AE3	NA

## Pollution Prevention and Control

SOPEP inventory is maintained in order. Good bunker plan is in place. Designated oil residue tanks are FO/ LO sludge tanks, Scavenge drain tank & waste oil tank for Incinerator with a total capacity of 9.3 cum. Oily bilge separator reportedly in good working order. Incinerator is reported working. Ships is provided with Bilge Holding tank of capacity 7.08 cum.

## Safe Working Practice

The permit to work system was sampled by the enclosed space entries carried out. All crew were always wearing the appropriate PPE. A good standard of safety was found.

## Shipboard Management & Crew Motivation

Crew Motivation is fair. Crew found to be familiar with shipboard equipment and general Safety Management System procedure. Maintenance of Common spaces and recreation places were fair. Due to possible water shortage, some common washrooms give bad odor.

### Our Concerns: 1. M/E Frequent Overhauls & Liner

#### Renewals:

Owners reported that during dry-docking in July 2017, all the Main Engine & Liners & Piston crowns were renewed. As per current liner wear data provided,



if all the Liners were renewed in July 2017, then why the overhauls should be done in July/Aug 2018. As we read from the Liner wear data provided the units no.7 and 5 are new liners. If it is indeed so, then why the liner be renewed in such short time interval.

If liners 5 & 7 were not renewed, then why the liner wear is so hint on other units as compared to Liners in units 5 & 7.

**2. Aux Engine #2 Failure** – AE#2 was failed for low lube oil pressure and failure of crankshaft this problem is persisting for the long time finally fixed in Sep18 as claimed.

**3. Intermediate Shaft issue-** There was measurement of the Shear stress on the Main Engine Intermediate Shaft and as result the barred ranges were revised by the class. This needs to be clarified as we suspect there is some issue with shaft or vibration making engine to run at lower RPM.

#### **4. Discrepancies in the Main Engine Performance-**

There is discrepancy between the ME performance record onboard and provided by the Ship Owner. Main engine performance was recorded on 10 Aug 18 at 172.3 rpm. FO consumption was 5.81 t/day. Cylinder oil consumption was 131.5 lt./day. Crankcase oil consumption was 20 lt/day. Exhaust temperatures ranged from 300 to 330 deg c.

Owners have sent a performance record stating Main engine was run on 232 rpm which is about 85 % MCR. FO consumption was 8.9 t/day. Cylinder oil consumption was 90 lt./day. Crankcase oil consumption was 12 lt/day. Exhaust temperatures ranged from 320 to 350 deg c. Data differs and It is rather unbelievable to get such a performance.

#### **5. Pending Annual Surveys**

Annual Surveys are in overdue range. Vessel will be out of class if survey is not completed before 12<sup>th</sup> Oct 2018. Why does shipowner not want to complete survey before due date?



### **6. Age of the Vessel and Oil Major Endorsement**

Vessel 20 years of age may be a concern for oil major to endorse the vessel for carriage of their cargo.

### **7. Forthcoming Regulation Compliance**

Vessel does not comply with Requirement of use of light fuels for ECA areas. It will require some modifications and

### **Our Recommendations**

- Please witness the Main Engine Performance and Generator performance as claimed by Ship Owner by yourself or your representative before moving forward on this purchase.
- Please wait until shipowner does not complete annual surveys same to be completed before 12 Oct 2018 otherwise vessel will be out of class.
- Clarify with ship Owner why the shear test of intermediate shaft was done? Whether there is any issue with power unbalancing or vibration, or misalignment of shaft?

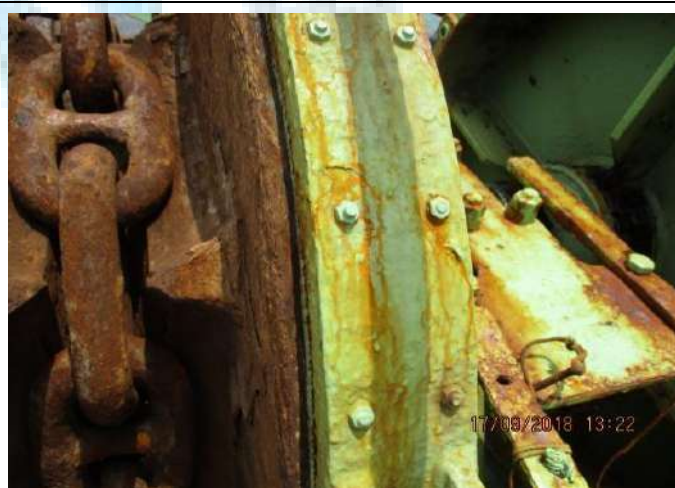
### Representative Photographs

#### 1. Hull Structure



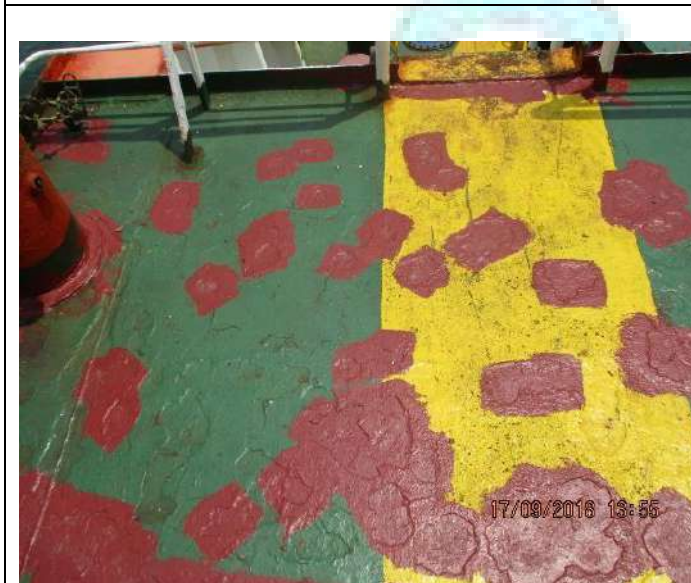


### 2. Forecastle and poop Deck





### 3. Main Deck & Deck Machineries





## 4.0 Ballast Tanks and Void Spaces





## 5.0 Cargo Pumps, Compressor Room, CCR, Cargo Tanks & Domes







### 6.0 Navigation Bridge and Accommodation







### 7.0 Engine Room Machinery







## 8. Firefighting Equipment





### 9.0 Life Saving Appliances



### 10 Environment Protection









End of Report Part- An Executive Summary

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### 11. Disclaimer

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