

Rpt. 4b

REPORT ON OIL ENGINE MACHINERY.

No. 5503.

3 JAN 1927

Received at London Office.

Date of writing Report 19.11.1926 When handed in at Local Office 30/11/1926 Port of

No. in Survey held at Kobe & Harima. Date, First Survey 25.7.25 Last Survey 19.11.1926
Reg. Book.on the ^{Single} Twin ^{Screw vessels} "YAHIKO MARU."Tons { Gross 5741.4
Net 3394.9

Built at HARIMA. By whom built KOBE STEEL WKS. HARIMA DOCKYARD Yard No. III When built 1926

Engines made at KOBE. By whom made " " " Engine No. 63 } When made 1926
64 }

Donkey Boilers made at ANNAN, SCOTLAND By whom made COCHRAN. Boiler No. 9478 When made 1926.

Brake Horse Power 3000 (2 ENGS) Owners ITAYA MIYAKICHI Port belonging to KOBE

Nom. Horse Power as per Rule 776 (2 ENGS) Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted YES.

OIL ENGINES, &c.—Type of Engines **SULZER DIESEL** 2 or 4 stroke cycle **2** Single or double acting **SINGLE**
 Maximum pressure in cylinders ⁶¹⁰ 43 kg/cm² No. of cylinders **8 (2 ENGS)** Diameter of cylinders **600 mm** No. of cranks **8 (2 ENGS)** Length of stroke **1060 mm**
 Span of bearings, adjacent to the Crank, measured from inner edge to inner edge **800 mm** Is there a bearing between each crank **YES**
 Revolutions per minute **110** Flywheel dia. **2100 mm** Weight **10170 Kgs** Means of ignition **TEMP. DUE TO COMPRESSION** Kind of fuel used **HEAVY FUEL OIL**
 Crank Shaft, dia. of journals as per Rule **390 mm** as fitted **405 mm** Crank pin dia. **405 mm** Crank Webs Mid. length breadth **600 mm** shrunk Thickness parallel to axis **solid**
 as fitted **405 mm** Mid. length thickness **220 mm** Thickness around eye hole
 Flywheel Shafts, diameter as per Rule **390 mm** as fitted **405 mm** Intermediate Shafts, diameter as per Rule **283 mm** as fitted **11 5/8"** Thrust Shaft, diameter at collars as per Rule **299 mm** as fitted **390 mm**
 Tube Shafts, diameter as per Rule **12.33 mm** as fitted **12 7/8"** Is the **shaft** fitted with a continuous liner **YES**

Bronze Liners, thickness in way of bushes as per Rule **7/8"** as fitted Thickness between bushes as per rule **1 1/8"** as fitted Is the after end of the liner made watertight in the propeller boss **YES**
 If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner **YES**

If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive **YES**
 If two liners are fitted, is the shaft lapped or protected between the liners **YES** Is an approved Oil Gland or other appliance fitted at the after end of the tube shaft **YES**

Propeller, dia. **12' 6"** Pitch **11' 3"** No. of blades **4** Material **BRONZE** whether Moveable **YES** Total Developed Surface **62** sq. feet
 Method of reversing Engines **DIRECT** Is a governor or other arrangement fitted to prevent racing of the engine **YES** Means of lubrication **FORCED**

Thickness of cylinder liners **45 to 20 mm** Are the cylinders fitted with safety valves **YES** Are the exhaust pipes and silencers water cooled or lagged with non-conducting material **YES** If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine **UPFUNNEL**

Cooling Water Pumps, No. **2 CENTRIFUGAL (160 l/min)** Is the sea suction provided with an efficient strainer which can be cleared within the vessel **YES**

Bilge Pumps fitted to the Main Engines, No. **1 EACH ENG** Diameter **165 mm** Stroke **140 mm** Can one be overhauled while the other is at work **YES**

Pumps connected to the Main Bilge Line { No. and Size **BALLAST 200 l/min** } **BILGE 100 l/min** } **2 @ 165 x 140 mm DA** }
 How driven **ELEC. MOTOR** } **ELEC. MOTOR** } **MAIN ENGINE** }
 Ballast Pumps, No. and size **1 - CENTRIFUGAL - 200 l/min** Lubricating Oil Pumps, including Spare Pump, No. and size **1" 1/33 x 19 x 127 mm Duplex** **1" 80 x 140 mm SA ENG SHAFT** **2" BOSS PATENT for LINES**

Are two independent means arranged for circulating water through the Oil Cooler **YES** Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge

Pumps, No. and size:—In Engine and Boiler Room **2 - 3"**
 In Holds, &c. **Nº 1 - 2 @ 3"** **Nº 2 - 2 @ 3 1/2"** **Nº 3 - 3 @ 3"** **Nº 4 - 2 @ 3"**

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size **2 @ 5"**

Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes **YES** Are the Bilge Suctions in the Machinery Space

led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges **YES**

Are all Sea Connections fitted direct on the skin of the ship **YES** Are they fitted with Valves or Cocks **BOTH**

Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates **YES** Are the Overboard Discharges above or below the deep water line **ABOVE**

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel **YES** Are the Blow Off Cocks fitted with a spigot and brass covering plate **YES**

What pipes pass through the bunkers **YES** How are they protected **YES**

What pipes pass through the deep tanks **YES** Have they been tested as per Rule **YES**

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times **YES**

Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another **YES** Is the Shaft Tunnel watertight **YES** Is it fitted with a watertight door **YES** worked from **ER PLATFORM**

On a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork **YES**

Main Air Compressors, No. **2 (2 ENGS)** No. of stages **3** Diameters **640 x 580 x 140 mm** Stroke **560 mm** Driven by **ENGINE SHAFT**

Auxiliary Air Compressors, No. **5 on Auxiliary Engines See Separate Report** No. of stages **2** Diameters **110 x 35 mm** Stroke **120 mm** Driven by **HOT BULB ENGINE SHAFT**

Small Auxiliary Air Compressors, No. **1** No. of stages **2** Diameters **110 x 35 mm** Stroke **120 mm** Driven by **SHAFT**

Scavenging Air Pumps, No. **2 INDEPENDENT (Brown Boveri)** Diameters **15,900 cm⁴/min** Stroke **EACH BLOWER** Driven by **ELECTRIC MOTOR**

Auxiliary Engines crank shafts, diameter as per Rule **170 mm** See also Report No 5503 (Aux Engines) on Auxiliary Engines.

IR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule **YES**

Can the internal surfaces of the receivers be examined **YES** What means are provided for cleaning their inner surfaces **INJECTION ... 2 1/4 hole at top**
STORAGE (HP) 270 mm " " " + bottom
STARTING ... 15" x 11" manhole

Is there a drain arrangement fitted at the lowest part of each receiver **YES**

High Pressure Air Receivers, No. **8** Cubic capacity of each **800 LITRES** Internal diameter **540 mm** thickness **7/8"**

Seamless, lap welded or riveted longitudinal joint **See also DUSSELDORF certificate of 29/10/25** Material **STEEL** Range of tensile strength **26 - 32 kg/mm²** Working pressure by Rules **437 kg/cm²**

Starting Air Receivers, No. **2** Total cubic capacity **about 1400 litres** Internal diameter **3' 7"** thickness **7/8"**

Seamless, lap welded or riveted longitudinal joint **SS STRAPS** Material **STEEL** Range of tensile strength **26 - 32 kg/mm²** Working pressure by Rules **437 kg/cm²**

009341-009344-0174

HYDRAULIC TESTS:—

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS	1925: Oct. 5, 9, 12, 18, 19 1926: Jan. 21, 27, 28	43 Kg/cm ²	1000 lbs."	B	TEST SATISFACTORY
" " COVERS	1925: Oct. 12, Nov. 2, 5, 29, 1926: Jan. 27, 28, 30 Feb. 1.	- do -	- do -	- do -	- do -
" " JACKETS	1925: Sept. 9, Oct. 9, Nov. 7, 11, 13, 1926: Jan. 13, 15 Feb. 9.	15 lbs."	90 "	- do -	- do -
" PISTON WATER PASSAGES	1926, Mar. 4, 5, 17, 19	45 "	- do -	- do -	- do -
MAIN COMPRESSORS—1st STAGE	23. 2. 26. 10. 4. 26.	5 Kg/cm ²	325 "	- do -	- do -
" 2nd "	23. 2. 26. 10. 4. 26.	9.5 "	- do -	- do -	- do -
" 3rd "	12. 1. 26. 16. 1. 26.	70 "	2200 "	- do -	- do -
AIR RECEIVERS—STARTING	10. 9. 26.	400 lbs."	600 lbs."	- do -	- do -
STORAGE	5. 6. 26. 6. 5. 26. 15. 6. 26. 29. 6. 26	70 Kg/cm ²	2200 lbs."	- do -	- do -
INJECTION (see also SHEARDED CERT. NO 2734.)	13. 3. 26	- do -	- do -	- do -	- do -
AIR PIPES	Apr. 1926: 1. 9. 10. 14. 15. 19. 10. 26.	- do -	- do -	- do -	- do -
FUEL PIPES	14. 4. 26 15	- do -	- do -	- do -	- do -
FUEL PUMPS	8. 12. 25 12. 1. 26 14. 2. 26	- do -	- do -	- do -	- do -
SILENCER					
EXHAUST WATER JACKET	27. 10. 25 6. 11. 25 5. 12. 25 5. 2. 26	15 lbs."	90 lbs."	- do -	- do -
SEPARATE FUEL TANKS	13. 9. 26.	✓	15 ft-head	B	- do -

SEPARATE FUEL TANKS

approved plans previously forwarded sub take letters -

PLANS. Are approved plans forwarded herewith for Shafting 28/10/25 21/1/26. Receivers (STARTING ONLY) 12.4.26 Separate Tanks 23.1.26.
(If not, state date of approval)

Donkey Boilers ✓ General Pumping Arrangements 16.4.26. Oil Fuel Burning Arrangements 23.9.26.

SPARE GEAR See separate list attached.

The foregoing is a correct description,

THE KOBE STEEL WORKS, LTD.

2d. Mukami.

Manufacturer.

Dates	During progress of work in shops - -	1925 July 25-28 Aug. 4 7 13 17 18 25 Sept. 2 4 9 10 12 15 16 17 18 Oct. 13 5 6 7 12 13 15 16 19 21 22 24 25	Nov. 1 2 3 6 7 9 13 14 16 17 19 21 25 26 28 Dec. 1 4 5 6 8 9 10 11 12 15 17 18 21 22 24 26	1926 Jan. 9 12 13 15 16 18 20 21 22 23 25 27 28 29 30/ Feb. 1 3 5 6 8 9 10 12 13 15 16 17 18 19 20 22 23 24 25 26 27/ Mar. 1 2 3 4 5 6 8 9 10 11 13 16 17 19 19 25 26 27 30	Apr. 1 2 5 8 10 13 15 16 17 19 20 21 22 26 28 30/ May 1 3 5 6 7 10 11 13 15 17 19 20 31 22 24 25 26 29 / June 1 2 7 8 9 10 11 14 15 19 21 22 23 24 29	July 2 7 15 17 22 24 28 30 Aug. 4 6 12 13 14 16 18 20 25 30 Sept. 13 16 17 20 30 Oct. 4 5 12 Nov. 1 2 4 5 10
of Survey while building	During erection on board vessel - -	1926 July 5 15 31 Sept. 6 7 10 20 22	Aug. 9 12 23 Oct. 1 7 11 15 19 26 29	Nov. 2 10 12 16 19	Total 228.	
	Total No. of visits					
Dates of Examination of principal parts—Cylinders 27.2.26 Covers 2.3.26 Pistons 10.2.26 Rods 3.3.26 Connecting rods 3.3.26						
Crank shaft	27.2.26 15.7.26	Flywheel shaft 2.3.26	Thrust shaft 25.3.26	Intermediate shafts 10.3.26 15.7.26	Tube shaft ✓	
Screw shafts	15.7.26	Propellers 15.7.26 26.7.26	Stern tube 24.6.26	Engine seatings 24.6.26	Engines holding down bolts 7.9.26	
Completion of fitting sea connections 26.7.26		Completion of pumping arrangements		Engines tried under working conditions		
Crank shaft, Material STEEL	Identification Mark B N° 768	Flywheel shaft, Material STEEL	Identification Mark B N° 782			
Thrust shaft, Material STEEL	Identification Mark B N° 783	Intermediate shafts, Material STEEL	Identification Marks B N° 791 B N° 786			
Tube shaft, Material ✓	Identification Mark	Screw shaft, Material STEEL	Identification Mark B N° 817A B N° 877D			

Is the flash point of the oil to be used over $150^{\circ} F.$

Is this machinery duplicate of a previous case NO. ✓ If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c.) The machinery of this vessel has been constructed under Special Survey according to the Rules + approved plans & the materials + workmanship are sound + good. The machinery has been efficient installed on board, tried under full working conditions + found satisfactory + is in my opinion eligible for the notation + Line 11-26

The amount of Entry Fee	...	£ 60 : -	✓	} When applied for, 19...
Special	£ 1707 : -	✓	
Donkey Boiler Fee	...	£ 50 : -	✓	} When received, 29.12.2 19...
<i>Installing & working only</i>				
Travelling Expenses (if any)		£ 233 : -	✓	

Committee's Minute

Assigned

FRI 7 JAN 1927

+ L 11: 26.
Oil Engines

Engineer Surveyor to Lloyd's Register of Shipping.

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Lloyd's Register
Foundation