

## REPORT ON OIL ENGINE MACHINERY.

No. 1600

Received at London Office

11th Aug. 27 11th Aug. 10 27 Port of NAGASAKI.

o. in Survey held at NAGASAKI.

Date, First Survey 26th June 1926 Last Survey 29th July 1927.

g. Book.

Number of Visits 118.

on the ~~Single~~ ~~Double~~ ~~Triple~~ ~~Quadruple~~ Screw vessel "COLUMBIA MARU".Tons { Gross 5611.74  
Net 3515.60

uilt at Nagasaki. By whom built Mitsubishi Zosen Kaisha, Ltd. Yard No. 4 2 7 When built 1927.  
Engines made at Nagasaki. By whom made Mitsubishi Zosen Kaisha, Ltd. Engine No. 4 2 7 When made 1927.  
Monkey Boilers made at Annan, Scotland. By whom made Cochran & Co (Annan) Ltd. Boiler No. 10177 When made 1926.  
Brake Horse Power 2300. Owners Mitsubishi Shoji Kaisha, Ltd., Port belonging to Tokio.  
om. Horse Power as per Rule 582. Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes  
rade for which vessel is intended North American.

L ENGINES, &c.—Type of Engines Mitsubishi-Sulzer. 2 or 4 stroke cycle 2 Single or double acting Single.  
Maximum pressure in cylinders 43 atm. Diameter of cylinders 600 m/m. Length of stroke 1060 m/m. No. of cylinders 6 No. of cranks 6  
Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 810 m/m. Is there a bearing between each crank Yes.  
Revolutions per minute 112. Flywheel dia. 2100 m/m Weight 10300 kg. Means of ignition Compression Kind of fuel used Heavy fuel oil.  
Crank Shaft, dia. of journals as per Rule 400 m/m as fitted 405 m/m Crank pin dia. 405 m/m Crank Webs Mid. length breadth 550 m/m Mid. length thickness 225 m/m Thickness parallel to axis / Thickness around eyehole /  
Flywheel Shaft, diameter as per Rule 400 m/m as fitted 405 m/m Intermediate Shafts, diameter as per Rule 301 m/m as fitted 12 1/2" Thrust Shaft, diameter at collars as per Rule 316 m/m as fitted 390 m/m  
Tube Shaft, diameter as per Rule / as fitted / Screw Shaft, diameter as per Rule 331 m/m as fitted 350.8 m/m Is the screw shaft fitted with a continuous liner Yes.  
Bronze Liners, thickness in way of bushes as per Rule 17.7 m/m as fitted 19 m/m Thickness between bushes as per rule 13.3 m/m as fitted 14.8 m/m 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 /  
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 /  
If two liners are fitted, is the shaft lapped or protected between the liners / Is an approved Oil Gland or other appliance fitted at the after end of the tube shaft No.  
Propeller, dia. 14'-3" Pitch 11'-3" No. of blades 4 Material Bronze. whether Moveable Yes Total Developed Surface 72 sq. feet  
Method of reversing Engines Direct. Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes. Means of lubrication forced. at top 45 m/m 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 /  
Cooling Water Pumps, No. Two. Is the sea suction provided with an efficient strainer which can be cleared within the vessel Yes.  
Bilge Pumps worked from the Main Engines, No. One. Diameter 115 m/m Stroke 140 m/m Can one be overhauled while the other is at work One only fitted.  
Pumps connected to the Main Bilge Line { No. and Size Three:- One-200 ton Bilge & Ballast. One-100 ton Bilge & G.S. How driven Electric motors. One-50 ton Bilge.  
Ballast Pumps, No. and size Two. { One-200 ton Duplex. { One-100 ton Lubricating Oil Pumps, including Spare Pump, No. and size 2-15 c.m. per hour. 1-2.4 " " "  
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 Machinery Spaces 4 @ 3 1/2". 2 @ 2". One @ 2" (No. 1 C.D.). One @ 2" (No. 2 C.D.). Tunnel well One @ 2 1/2".  
In Holds, &c. No. 1 Hold 2 @ 3". No. 2 Hold 2 @ 3 1/2". Deep Tanks 2 @ 6". No. 4 Hold 2 @ 3 1/2".  
Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size One @ 8". 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 Spaces 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 / How are they protected /  
What pipes pass through the deep tanks / Have they been tested as per Rule /  
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 Top platform at Bridge Deck Level.  
If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork /  
Main Air Compressors, No. Two. No. of stages 3. Diameter 560/510/120 Stroke 350 m/m Driven by Main Engine.  
Auxiliary Air Compressors, No. Two. No. of stages 3. Diameter 325/290/65 Stroke 180 m/m Driven by Elec. Motor.  
Small Auxiliary Air Compressors, No. One. No. of stages 2. Diameters 110/35/ Stroke 120 m/m Driven by Oil Engine.  
Scavenging Air Pumps, No. One-Double. Diameter Rotary- 10,000 cu. ft. of air per min. Driven by Elec. Motor.  
Auxiliary Engines crank shafts, diameter as per Rule / as fitted /

AIR 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 Handholes.

Is there a drain arrangement fitted at the lowest part of each receiver Yes.

High Pressure Air Receivers, No. 6. Cubic capacity of each 800 litres. Internal diameter 540 m/m. thickness 25 m/m.  
Seamless, lap welded or riveted longitudinal joint Seamless. Material Steel. Range of tensile strength 28-35 ton Working pressure by Rules 98.1 kg./sq. cm.  
Starting Air Receivers, No. One. Total cubic capacity 5 c.m. Internal diameter 1200 m/m. thickness 11/16" Working pressure by Rules 363.3 lbs.  
Seamless, lap welded or riveted longitudinal joint T.R.D.B.S. Material Steel. Range of tensile strength 28-35 ton end 25 to 30 ton.



IS A DONKEY BOILER FITTED? **Yes.**

If so, is a report now forwarded? **Yes.**

PLANS. Are approved plans forwarded herewith for Shafting **Yes.**  
(If not, state date of approval)

Receivers **Yes.** Separate Tanks **Yes.**

Donkey Boilers **No. (Annan, Scot).** General Pumping Arrangements **Yes.**

Oil Fuel Burning Arrangements **Yes.**

SPARE GEAR As per Rules and in addition:- (See separate list).

The foregoing is a correct description,

NAGASAKI WORKS, MITSUBISHI ZOSEN KAISHA, LTD.

GENERAL MANAGER. Manufacturer.

Dates of Survey while building  
During progress of work in shops - 1926: June 26, July 5, 6, 8, 12, 20, 23, Aug. 2, 4, 7, 21, Sep. 9, 21, 28, Oct. 23, Nov. 1, 11, Dec. 20, 23, 24, 1927: Jan. 7, 14, 15, 21, 24, 26, 31, Feb. 9, 18, 22, 24, 26, Mar. 3, 8, 11, 16, 18, 19, 23, 25, 30, Apr. 1, 3, 4, 6, 7, 8, 9, 11, 13, 14, 15, 19, 20, 22, 23, 25, 28, 30, May 3, 4, 5, 6, 7, 10, 11, 23, 24, 25, 27, 28, 29, 30, July 1, 2, 4, 6, 8, 9, 11, 12, 13, 18, 21, 25, 27, 29.  
During erection on board vessel -  
Total No. of visits **118.**

Dates of Examination of principal parts - Cylinders 2-4-27, 23-3-27, Covers 14-4-27, 20-5-27, Pistons 25-4-27, Rods 11-3-27, Connecting rods 11-3-27, Crank shaft 15-10-26, 22-10-26, Flywheel **Prague** and Thrust shaft 15-10-26, Intermediate shafts 6-4-27, Tube shaft /

Screw shaft 12-5-27, Propeller 24-5-27, Stern tube 23-5-27, Engine seatings 27-5-27, Engines holding down bolts 20-6-27, Completion of fitting sea connections 31-5-27, Completion of pumping arrangements 8-7-27, Engines tried under working conditions 25-7-27.

Crank shaft, Material **Ingot steel.** Identification Mark **LLOYD'S No. 3290 & 3296.** Flywheel shaft, Material **Ingot steel.** Identification Mark **LLOYD'S No. 3290 & 3296.**

Thrust shaft, Material **Ingot steel.** Identification Mark **See Flywheel.** Intermediate shafts, Material **Ingot steel.** Identification Marks **LLOYD'S No. 6962-11, 1724-1765, 1767 GA 6-**

Tube shaft, Material / Identification Mark / Screw shaft, Material **Ingot steel.** Identification Mark **LLOYD'S No. G.A. 12-5-27.**

Is the flash point of the oil to be used over 150° F. **Yes.**

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 has been constructed under**

**Special Survey and installed in the vessel in accordance with the Rules and approved plans. The materials and workmanship are good and the machinery has been examined under working condition and found satisfactory.**

**The machinery of this vessel is eligible in my opinion to have the record of LMC 7-27.**

The amount of Entry Fee ... £ 60:00 : When applied for,  
Special ... £ 1561:50 : 4. 8. 1927  
Donkey Boiler Fee ... £ 50:00 : When received,  
Air vessel. ... £ 31:50 : 15. 8. 1927  
Travelling Expenses (if any)

Committee's Minute **FRL 30 SEP 1927**

Assigned

CERTIFICATE WRITTEN

**George Anderson**  
Engineer Surveyor to Lloyd's Register of Shipping.

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Foundation