

REPORT ON OIL ENGINE MACHINERY.

No. 1743
19 SEP 1930

Received at London Office

Date of writing Report 25th Aug. 1930 When handed in at Local Office 25th Aug. 1930 Port of NAGASAKI.
No. in Survey held at NAGASAKI. Date, First Survey 22nd Oct. 1929 Last Survey 15th Aug. 1930.
Reg. Book. 86658 on the Twin Screw vessel "TOKAI MARU". Number of Visits 161.

Built at Nagasaki. By whom built Mitsubishi Zosen Kaisha, Ltd. Yard No. 472 When built 1930
Engines made at Nagasaki. By whom made " " " Engine No. 472 When made 1930
Donkey Boilers made at Nagasaki. By whom made " " " Boiler No. 472 When made 1930
Brake Horse Power 7,200. Owners Osaka Shosen Kabushiki Kaisha. Port belonging to Osaka.
Nom. Horse Power as per Rule 1,495. Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes
Trade for which vessel is intended Japan - New York.

OIL ENGINES, &c.—Type of Engines Mitsubishi-Sulzer Diesel Engine 2 or 4 stroke cycle 2 Single or double acting Single
Maximum pressure in cylinders 40 Kg/cm² Diameter of cylinders 680 m/m Length of stroke 1200 m/m No. of cylinders 12 No. of cranks 12
Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 930 m/m Is there a bearing between each crank Yes
Revolutions per minute 120 Flywheel dia. 2200 m/m Weight 7800 Kg. Means of ignition Compression Kind of fuel used Heavy fuel oil.
Crank Shaft, dia. of journals as per Rule 457.3 m/m as fitted 470 m/m Crank pin dia. 470 m/m Crank Webs Mid. length breadth 620 m/m Thickness parallel to axis 260 " shrunk Thickness around eye-hole 260 "
Flywheel Shaft, diameter as per Rule 457.3 m/m as fitted 470 m/m Intermediate Shafts, diameter as per Rule 338.4 m/m as fitted 350 m/m Thrust Shaft, diameter at collars as per Rule 457.3 m/m as fitted 470 m/m
Tube Shaft, diameter as per Rule 368.5 m/m as fitted 380 m/m Is the tube shaft fitted with a continuous liner Yes
Bronze Liners, thickness in way of bushes as per Rule 18.8 m/m as fitted 22 m/m Thickness between bushes as per rule 14.1 m/m as fitted 16 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 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 Length of Bearing in Stern Bush next to and supporting propeller 1520 m/m
Propeller, dia. 14'-0" Pitch 14'-9" No. of blades 4 Material Bronze whether Moveable Yes Total Developed Surface 48.3 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
Thickness of cylinder liners 53 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 Yes
Cooling Water Pumps, No. 2 @ 300 M³/hr for Cylinders. 2 @ 65 " " Pistons. 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. 2 @ 110 M³/hr. 1 @ 30 M³/hr. Can one be overhauled while the other is at work Yes
Pumps connected to the Main Bilge Line { No. and Size 2 @ 110 M³/hr. 1 @ 30 M³/hr. How driven Electric motor.
Ballast Pumps, No. and size 1 @ 110 M³/hr. Lubricating Oil Pumps, including Spare Pump, No. and size 1 @ 52 M³/hr for Bearing. 1 @ 7 " for Crosshead. One of each. - Spare.
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". Cofferdams 1 each @ 2".
In Holds, &c. No.1- 2 @ 3". No.2- 2 @ 3". No.3- 2 @ 3". No.4- 1 @ 3". No.5- 1 @ 3". No.6- 1 @ 3". Pipe passage 1 @ 2". No.1 Cofferdam 1 @ 2". Tunnel well 1 @ 2 1/2".
Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 2 @ 5 1/2". 1 @ 2 1/2". 1 @ 8" (Emergency).
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 Both
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 Upper Deck
If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork Yes

AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule Yes Hand hole- HP Air Recr. Man hole- LP Air Recr.
Can the internal surfaces of the receivers be examined Yes What means are provided for cleaning their inner surfaces Yes
Is there a drain arrangement fitted at the lowest part of each receiver Yes
High Pressure Air Receivers, No. 2 Cubic capacity of each 150 litre Internal diameter 300 m/m thickness 16 m/m 2500 litre 775 m/m 32.5 m/m
Seamless, lap welded or riveted longitudinal joint Seamless Material Steel Range of tensile strength 28-35 tons Working pressure by Rules 103.7 Kg/cm² sq. in. 91.7 "
Starting Air Receivers, No. 2 Total cubic capacity 12 Cub.M. Internal diameter 1200 m/m thickness 22.5 m/m
Seamless, lap welded or riveted longitudinal joint Riveted Material Steel Range of tensile strength 28-35 tons Working pressure by Rules 484.9 lbs sq. in. sq. in.

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IS A DONKEY BOILER FITTED? Yes If so, is a report now forwarded? Yes
 PLANS. Are approved plans forwarded herewith for Shafting Yes Receivers Yes Separate Tanks Yes
 (If not, state date of approval)
 Donkey Boilers Yes General Pumping Arrangements Yes Oil Fuel Burning Arrangements /
 SPARE GEAR As per the Rules and in addition. (See separate list).

The foregoing is a correct description,
 NAGASAKI WORKS, MITSUBISHI ZOSHEN KAISHA, LTD.

S. Goto
 GENERAL MANAGER

Manufacturer.

1929. Oct 22.26.29.31 Nov 1.2.4.5.8.11.12.13.14.16.19.22.25.26.28.29.30 Dec 4.5.9.10.
 Dates of Survey while building
 During progress of work in shops 13.14.16.17.19.21.24.
 During erection on board vessel -- 14.15.17.18.19.21.24.25.26.27.28.29.31
 Total No. of visits 161. 4.6.8.9.10.23.24.28.31
 Dates of Examination of principal parts—Cylinders 8-3-30 to 4-4-30 Covers 25-2-30 to 4-3-30 Pistons 19-3-30 to 11-4-30 Rods 22-10-29 to 16-5-30 Connecting rods 11-11-29 to 28-3-30
 Crank shaft 10-10-29 to 12-12-29 (Vienna) Flywheel shaft and Thrust shaft 22-10-29 (Hakodate) Intermediate shafts 29-11-29 to 22-4-30 Tube shaft /
 Screw shaft 21-2-30 to 22-4-30 Propeller 23-7-30 Stern tube 27/29-3-30 Engine seatings 9-5-30 Engines holding down bolts 6-6-30
 Completion of fitting sea connections 14-5-30 Completion of pumping arrangements 8-7-30 Engines tried under working conditions 24-7-30
 Crank shaft, Material Ingot steel Identification Mark See below Flywheel shaft, Material Ingot steel Identification Mark See Thrust shaft
 Thrust shaft, Material Ingot steel Identification Mark P. LLOYD'S No. 649 ZS 22-10-29 Intermediate shafts, Material Ingot steel Identification Marks See below.
 Tube shaft, Material / Identification Mark / Screw shaft, Material Ingot steel Identification Mark P.S. LLOYD'S No. K.K. 22-4-

Is the flash point of the oil to be used over 150° F. Yes
 Is this machinery duplicate of a previous case Yes If so, state name of vessel "Kinai Maru". Nag. Rpt. No. 1737.
 General Remarks (State quality of workmanship, opinions as to class, &c.)

Identification Mark:- CRANK SHAFTS.
 Port:- LLOYD'S No. 3826 HK 21-11-29. 10000. Star:- LLOYD'S No. 3687 HK 10-10-29. 9865.
 " " No. 3863 HK 12-12-29. 10099. " " No. 3826 HK 21-11-29. 9999.

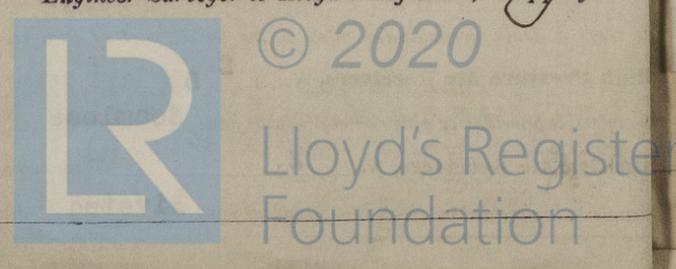
Identification Mark:- INTERMEDIATE SHAFTS.
 Port:- LLOYD'S No. 235. G.A. 25-2-30. 1 off. Star:- LLOYD'S No. 235. K.K. 8-2-30. 1 off.
 " " " K.K. 28-2-30. 2 " " " 15-2-30. 1 "
 " " " 24-3-30. 1 " " " 18-3-30. 2 "
 " " " 10-4-30. 1 " " " 24-3-30. 1 "
 " " " 22-4-30. 2 " " " 10-4-30. 1 "
 " " " " 22-4-30. 1 "

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 ALMO 8-'30
 Mean speed on trial 18.323 knots, at 14'-1 1/2" draught. this vessel is eligible for THE RECORD + L.M.C. 8.30 C-L
 Certificates of Castings and Forgings herewith. Oil Engines 2SCSA, 12cy 26 3/4 - 47 1/4 DB. 100

The amount of Entry Fee ... £ 60:00 : When applied for,
 Special ... £ 2060:78 : 13. 8. 1930
 Donkey Boiler Fee ... £ 63:00 : When received,
 Air Receivers ... £ 94:50 : 25. 8. 19 30
 Travelling Expenses (if any) £

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

Committee's Minute FRI. 26 SEP 1930
 Assigned + L.M.C. 8.30
Oil Eng. DB. 100 etc.



CERTIFICATE WRITTEN