

REPORT ON OIL ENGINE MACHINERY.

No. 2336

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Date of writing Report 18th Mar 1938 When handed in at Local Office 18th Mar 1938 Port of NAGASAKI.
 No. in Survey held at NAGASAKI. Date, First Survey 28th Sep. 1936 Last Survey 10th Mar 1938
 Reg. Book. Number of Visits 203

37151 on the Single Triple Quadruple Screw vessel "AZUMA MARU", Tons Gross 6646
Net 5651

Built at Nagasaki By whom built Mitsubishi Jukogyo K.K. Yard No. 700 When built 1938
 Engines made at Nagasaki By whom made Mitsubishi Jukogyo K.K. Engine No. 700 When made 1938
 Donkey Boilers made at Nagasaki By whom made Mitsubishi Jukogyo K.K. Boiler No. 700 When made 1938
 Brake Horse Power 8,000. Owners Nippon Yusen K.K. Port belonging to Tokyo
 Nom. Horse Power as per Rule 2,248. Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes
 Trade for which vessel is intended All Seas. 283/6 47 1/2

OIL ENGINES, &c.—Type of Engines Mitsubishi Aireless Injection. 2 or 4 stroke cycle 2 Single or double acting Double

Maximum pressure in cylinders 45 Kg/cm² Diameter of cylinders 720 m/m Length of stroke 1200 m/m No. of cylinders 8 No. of cranks 8
 Mean Indicated Pressure 5.3 Kg/cm²

Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 1020 Is there a bearing between each crank Yes
 Revolutions per minute 110 Flywheel dia. 2795.74 Weight 2875 Kgs Means of ignition Compressor Kind of fuel used Diesel F.P. above 150° F.

Crank Shaft, dia. of journals as per Rule App. Lon. 510 m/m Crank pin dia. 510 m/m Crank Webs Mid. length breadth 860 m/m Thickness parallel to axis 320 m/m
as fitted 510 m/m Mid. length thickness 320 m/m Thickness around eye hole 242.5 m/m

Flywheel Shaft, diameter as per Rule App. Lon. 510 m/m Intermediate Shafts, diameter as per Rule 427.22 m/m Thrust Shaft, diameter at collars as per Rule 448.64 m/m
as fitted 510 m/m as fitted 438 m/m as fitted 510-440 m/m

Tube Shaft, diameter as per Rule Screw Shaft, diameter as per Rule 465.83 m/m Is the yes shaft fitted with a continuous liner Yes
as fitted as fitted 480 m/m

Bronze Liners, thickness in way of bushes as per Rule 21.9 m/m Thickness between bushes as per rule 16.4 m/m Is the after end of the liner made watertight in the
as fitted 25 m/m as fitted 25 m/m

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 / If so, state type / Length of Bearing in Stern Bush next to and supporting propeller 1950 m/m

Propeller, dia. 5550 m/m Pitch 5000 m/m No. of blades 4 Material Bronze whether Moveable Moveable Total Developed Surface 10.6 M²
5000 m/m 4 Bronze Moveable 10.6 M²

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 45-40m/m Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers not 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. 2- Jacket & Piston Cooling. Is the sea suction provided with an efficient strainer which can be cleared within the vessel Yes
2- CIRCULATING WATER COOLER.

Bilge Pumps worked from the Main Engines, No. / Diameter / Stroke / Can one be overhauled while the other is at work /

Pumps connected to the Main Bilge Line No. and Size 2 Reciprocating, (1 off 100 M³/Hr. One Rotary Centrex 110 M³/Hr.)
How driven Electric Motor.

Is the cooling water led to the bilges No If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping

arrangements / 1- Recip: 100 M³/hr. 1- Rotary 110 M³/hr. Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size 2 Rotary, 80 M³/hr:

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 @ 90 m/m Dia: and 4 @ 50 m/m Dia: In Pump Room /

No. 1, 2 @ 80m/m: 1 @ 50m/m in Coff: No. 2, 2 @ 90m/m: No. 3, 2 @ 80m/m: No. 4, 4 @ 80m/m: (D.Tks)

In Holds, &c. 2 @ 50m/m in D.Tks Coff: No. 5, 3 @ 80m/m: No. 6, 2 @ 80m/m: Tunnel Well, 1 @ 80m/m:

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1 @ 200m/m Dia: 1 @ 140 m/m Dia:

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, (Independent B.R. suction fitted with knee boxes).

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 Below

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 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 /

Main Air Compressors, No. 2, (Kob. cert. No. 6808) No. of stages 3 Diameters 80:360:310 Stroke 180 m/m Driven by Aux. engine

Auxiliary Air Compressors, No. One No. of stages One Diameters 150 m/m Stroke 230 m/m Driven by 30 KW. Aux. Gen.

Small Auxiliary Air Compressors, No. One No. of stages 2 Diameters 32 x 80 Stroke 80 m/m Driven by Hand

Scavenging Air Pumps, No. 8 Diameter 840 m/m Stroke 1200 m/m Driven by Main Engine

Auxiliary Engines crank shafts, diameter as per Rule For particulars. No. 3 Main, 1 Auxiliary.
as fitted See Kobe Rpt (No Number) here Position Lower engine room.
with.

009301-009310-0066

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 and cleaned. **Yes**

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

High Pressure Air Receivers, No. /

Cubic capacity of each /

Internal diameter /

thickness /

Seamless, lap welded or riveted longitudinal joint /

Material /

Range of tensile strength /

Working pressure by Rules /
Actual /

Starting Air Receivers, No. **2**, (Nag. Cert. No. 1925)

Total cubic capacity **36 Cub. Metres**

Internal diameter **1950 m/m**

thickness **32.5 m/m**

Seamless, lap welded or riveted longitudinal joint **T.R.D.B.S.**

Material **Steel**

Range of tensile strength **44-55 Kgs**

Working pressure by Rules **30.9 Kg/cm²**

Actual **30 Kg/cm²**

IS A DONKEY BOILER FITTED? **Yes**

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

Is the donkey boiler intended to be used for domestic purposes only. **No**

PLANS. Are approved plans forwarded herewith for Shafting. **No.** **30-11-36**
(If not, state date of approval) **15-3-37.**

Receivers **24-4-37**

Separate Fuel Tanks **12-7-37**

Donkey Boilers **4-5-37**

General Pumping Arrangements **7-5-37 & 18-7-37**

Pumping Arrangements in Machinery Space **18-7-37**

Oil Fuel Burning Arrangements **9-11-37**

SPARE GEAR.

Has the spare gear required by the Rules been supplied. **Yes**

State the principal additional spare gear supplied **See Separate list, forwarded under separate cover.**

The foregoing is a correct description,

GENERAL MANAGER, Manufacturer.

1936: Sep 28 Oct 5.14 Nov 4.24.26.30 Dec 5.7.21.22.30: 1937 Jan 6.13.23.30 Feb 5.10.
Dates of Survey while building { During progress of work in shops - **18.19.22 Mar 10.12.13.15.19.23.27.29.30.31 Apr 5.7.9.10.15.17.19.21.26.28 May 5.6.**
During erection on board vessel - **10.11.14.15.20.22.24.25.26.28.29.31 June 1.2.3.4.5.7.8.9.11.14.15.16.17.18.21.22.23.**
Total No. of visits **24.26.28.30 Jul 1.2.3.6.7.12.19.21.23.26.28.29.30.31 Aug 2.3.4.5.6.7.9.10.11.12.**
28 Oct 1.2.5.8.9.11.14.15.16.18.19.20.21.23.24.27.28 Nov 3.4.10.11.12.15.16.18.20.24.
29.31 Dec 2.6.4.8.10.11.13.16.17.18.22.23.24: 1938 Jan 8.11.14.21.25.26.27.28.

Dates of Examination of principal parts—Cylinders **30-7-37** Covers **17-5-37** Pistons **24-5-37** Gads **5-5-37** Connecting rods **19-8-37**

Crank shaft **18-11-36** Flywheel shaft **29-3-37** Thrust shaft / Intermediate shafts **24-3-37** Tube shaft /

Screw shaft **6-4-37** Propeller **12-7-37** Stern tube **26-7-37** Engine seatings **4-5-10-37** Engines holding down bolts **14-1-38**

Completion of fitting sea connections **22-10-37** Completion of pumping arrangements **28-1-38** Engines tried under working conditions **22-2-38**

Crank shaft, Material **M.S.** Identification Mark **LR No. 1767 & 1767-A. HDB.** Flywheel shaft, Material **M.S.** Identification Mark **LR No. 1860 HDB**

Thrust shaft, Material **M.S.** Identification Mark / Intermediate shafts, Material **M.S.** Identification Marks **LR No. 1905 HDB**

Tube shaft, Material / Identification Mark / Screw shaft, Material **M.S.** Identification Mark **LR No. 1913 HDB**

Is the flash point of the oil to be used over 150° F. **Yes** (Spare Screw shaft:- **LR No. 1961 HDB**)

Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with **Yes**

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo **Yes** If so, have the requirements of the Rules been complied with **Yes**

If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with /

Is this machinery duplicate of a previous case **Yes** If so, state name of vessel **"Awata Maru" Neg. Rpt No. 2328.**

General Remarks (State quality of workmanship, opinions as to class, &c.)

This machinery has been constructed under Special survey in accordance with the Rules & Approved plan

The materials have been tested found efficient and the workmanship throughout is good.

Full load, overload & governor tests were carried out with engine connected to hydraulic brake with satisfactory results, afterwards all parts opened up examined and all found good.

Feed water heater constructed in accordance with Rules & approved plan, heated by exhaust gas from

Auxiliary Generators

This machinery has been efficiently installed on board tested under full load, overload, manoeuvring

(12 steps & 12 starts) and slow running (30-40 r.p.m) conditions with satisfactory results.

A mean speed of 18.5 knots was obtained on light draught at 117.5 r.p.m.

This case is eligible in our opinion to have the record of **LMC, 3-38 in the Register Bk.**

The amount of Entry Fee .. £ **6-0-0** : When applied for,

Special £ **195-5-0** : **16. 3. 1938**

Donkey Boiler Fee £ **5-5-0** : When received,

Air Receivers:- **10-10-0** : **73. 5. 1938**

Travelling Expenses (if any) £ : **73. 5. 1938**

Committee's Minute **TUE. 26 APR 1938**

Assigned **+dmb. 3.38**

oil eng. Ch.
DB-1000

A. Buchanan & T. R. ...
Engineer Surveyor to Lloyd's Register of Shipping.

L Lloyd's Register Foundation