

No. 11555.
t of Survey for Repairs, &c., of Engines and Boilers.

Report 6/7/ 40. When handed in at Local Office 11/7/ 40 Port of Kobe.
Survey held at Kobe. Date, First Survey 29/9/39 Last Survey 3/5/ 1940. (No. of Visits 27.)

the Machinery of the ~~Wakabayashi~~ Steel T.M.S. "RIO DE JANEIRO MARU"
9627 Vessel built at Nagasaki. By whom Mitsubishi Zosen K.K. When 1930 5mo.
5829 Engines made at Nagasaki. By whom Mitsubishi Zosen K.K. When 1930.
503 NHP Boilers, when made (Main) -- (Donkey) 1930.
-- Owners Osaka Syosen Kabusiki Kaisya. Owners' Address
-- Managers -- Port Osaka. Voyage
-- If Surveyed Afloat or in Dry Dock Both
-- (State name of Dock.) Mitsubishi Dock.
rs 120 lbs.

Particulars of Classification (which must be inserted precisely as in Register Book & Supplements).
CHARACTER. *100AL 8,39 with freeboard. *LMC (CS) 10,38 10,38 DBS 8,39 *Lloyd's RMC 8,39 TS (CL) 6,38
ssOsa.No.2-38.

s of Examination and Repairs (if any) LMC (CS) & DBS. AND DAMAGE.
when held, must be reported in detail and serially in the terms of the Rules. State clearly the if any, and, in detail, the nature and extent of Examinations and subsequent Repairs. Repairs on (the cause of which must be stated) should be separated from Repairs due to other causes; and lled in the body of the report, should be briefly summarised at the end of the report. State also the of any letters respecting this case.
where the Surveyor has not made a special damage report he is required to state whether he vices for this purpose, and why they were declined --
ort made by anyone else? If so, by whom? --
sonally go inside each Main Boiler separately and make a thorough examination at this time? --
Donkey " " " Yes.
state for what reasons? --
he Boilers could not be thus thoroughly examined? --
eans, in the absence of internal examination, were adopted by the }
e himself of the thorough efficiency of those parts of each Boiler? }

Internal examination of each boiler April 1940. Present condition of funnel(s) Good.
amine the Safety Valves of the Main Boiler? -- To what pressure were they afterwards adjusted under steam? --
examine the Safety Valves of Donkey Boiler? Yes. To what pressure were they afterwards adjusted under steam? 120 lbs.
amine all the manholes, doors and their fastenings of the Main Boilers? -- , and of the Donkey Boilers? Yes.
amine the drain plugs of the Main Boilers? -- , and of the Donkey Boiler? --
amine all the mountings of the Main Boilers? -- , and of the Donkey Boiler? Yes.
ow been drawn and examined? No Is it fitted with continuous liner? -- Is an approved appliance fitted at the after end of }
the shaft to permit of it being efficiently lubricated? }
on changed? -- If so, state reasons --
fitted been previously used? -- Has it a continuous liner? -- Is an approved appliance fitted at the after end of }
the shaft to permit of it being efficiently lubricated? }
nation of Screw Shaft. -- State the distance between lignum vitae ~~between~~ of stern bush and top of after bearing of screw shaft P. 3.2 m/m S. 3.7 m/m
s, when referred to by numbers, should be counted from forward. Is electric light and power fitted? Yes.
ot complete, state what arrangements have been made for its completion and what remains to be done Complete.

for LMC (CS):-
Vessel placed in dry dock, P & S propellers, aft end of stern bushes, sea cocks and valves shell fastenings examined and found or now placed in good condition.
All the Main and Auxiliary Machinery, including pumps, starting and injection air bottles boiler feed and oil fuel pumps opened out, examined and found or placed in good condition. The electric installation in the Engine Room and damaged accommodation has been thoroughly , placed in good condition and satisfactorily tested.
The Donkey Boiler was examined over all parts with doors, mountings and safety valves and ow placed in good condition. Safety valves adjusted under steam as stated above.
The oil fuel burning installation for donkey boiler examined under working condition and rder.

(P.T.O.).
bservations, Opinion, and Recommendation:- The machinery and donley boiler of this what alteration, if any, is suggested to be made in the existing classification of the vessel's machinery in the Register Book, consequent upon this survey, and also ration required to be made in the records of the vessel's machinery, boilers, working pressures, &c.; thus, for example, B.S. 9,11, B.&M.S. 9,11, * L.M.C. 9,11, or 140 lb., F.D., &c.)
in good condition and eligible, in our opinion, to be continued as classed with fresh
*L.M.C. (C.S.) 5, 40. and D.B.S. 5, 40.

tion 20) Yen 120:00 Fees applied for 6/7/ 19 40
Repair Fee (if any) (See Hull Report).
tion 20.) (See Hull Report). Received by me, 19
(if chargeable)
s Minute FRI 13 SEP 1940
+ Line 540
278 540
007846 - 007856 - 0097 1/7
Lloyd's Register Foundation
Is a Certificate required? If so, to be sent to

REPAIRS DUE TO WEAR AND TEAR:-

Port Main Engine, No.6 cylinder liner renewed on account of wear.

No.2 auxiliary diesel engine, port forward, Nos.4 & 5 cylinder liners renewed on account of wear.

No.1 Jacket cooling water pump impeller shaft skimmed up and new neck and gland bushes fitted.

Driving shaft of No.2 Lubricating oil pumps skimmed up and bushes remetalled.

steam valve chests of Donkey Boiler Feed and Oil Fuel pumps bored out and shuttles renewed.

Minor other repairs and adjustments effected.

REPAIRS DUE TO DAMAGE stated to have been caused by collision with the M.S. "KAGU MARU", on the 4th September 1939, during a dense fog in the Pacific Ocean, about 1840 miles from Yokohama whilst on a voyage from Yokohama to Los Angeles. For further particulars please see Log Books and Kobe Damage report dated 26th June 1940 attached hereto.

Damage caused by Flooding:-In Engine Room:-

It was stated that the Machinery Space was flooded to a depth of 18 feet over the tank top (about 15 inches below the 3rd deck) and that, during the return voyage to Japan, under tow, of several days the vessel rolled to the extent of 12°. The shaft tunnels were flooded to a depth of about 2 feet before the water tight door was closed. The vessel is equipped with 2 six cylinder Sulzer type 2 S.C.S.A. Heavy Oil Engines for main propelling purposes, 2 electrically driven turbo-blowers for supplying scavenging air to the main engines, 3 six cylinder 4 S.C.S.A. Heavy Oil engines driving 3 - 230 K.W. generators and the usual complement of electrically driven pumps necessary for the above installation. The main switchboard is situated on the 3rd deck and is undamaged, except for slight splashing during the rolling of the vessel, but an auxiliary switchboard, carrying the connections for the engine room pumps, etc., placed on the engine room floor level, was submerged.

The following general recommendations were made:-

Port and Starboard Main Engines and the three auxiliary generator engines to be opened out, cleaned and examined, both auxiliary air compressors and all pumps to be opened out, cleaned, examined and repaired as found necessary.

Nos.1 & 2 refrigerating machines, two brine and two circulating water pumps to be opened out, cleaned, examined and repaired as found necessary.

Double bottom lubricating oil, piston cooling water, fresh water and oil fuel tanks in way of the engine room to be cleaned and examined, Lubricating oil and piston cooling pipes and systems to and through the main and auxiliary engines to be thoroughly cleaned out.

All spare gear attached to bulkheads and the ship sides to be removed, cleaned, examined and replaced.

All submerged electrical generators and motors to be cleaned, overhauled and field and armature coils to be rewound; controllers, starters and switches for the above to be cleaned and repaired as necessary.

All submerged wiring for generators, motors and lighting circuits to be renewed.

Upon opening up the machinery the following detailed recommendations were made and repairs effected.

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Port and Starboard Main Engines:-

12 cylinder covers with their valves, splashed - now covers cleaned and valves overhauled.

Camshaft and camshaft driving gear splashed and partly submerged - now cleaned and polished and cam rollers overhauled.

12 pistons and piston cooling gear submerged in sea water - now pistons and piston cooling gear cleaned and overhauled.

12 cylinder and liners, slightly pitted at lower ends, - now cleaned and polished.

Top end pins of 12 crossheads, badly pitted on lower sides - now top end pins skimmed up and bearings remetaled.

12 guides and guide shoes rusted with sea water - now cleaned, polished and adjusted.

12 connecting rods submerged in sea water - now cleaned and oil passages cleaned out.

Port and Starboard Main Engine Driven Twin Air Compressors:-

4 cylinder heads submerged in sea water - now cylinder heads cleaned out, H.P., M.P. and L.P. valves - removed, and overhauled.

4 three stage pistons submerged in sea water - now cleaned and overhauled and new piston rings fitted.

4 three stage cylinders, slightly pitted - now cleaned and polished.

4 piston rods, slightly pitted - now skimmed up and gland packing renewed.

H.P., M.P. and L.P. intercoolers filled with sea water - now cleaned, and overhauled as necessary.

Top end pins of 4 crossheads, pitted on under side - now skimmed up and bearings remetaled.

4 connecting rods, submerged in sea water - now cleaned and polished and oil passages cleaned out.

Port and Starboard Main Engine Crankshafts, including compressor crankshafts found pitted on journals and crankpins. - now dressed up, oil stoned and polished, all oil passages cleaned out, alignment checked and bearings adjusted.

Port and Starboard thrust shafts, slightly pitted - now cleaned and polished.

Port and Starboard intermediate shafting partly submerged and splashed with sea water - now cleaned and polished.

Port and Starboard Main Engine fuel pumps, submerged and moving parts, slightly pitted - now cleaned and overhauled as necessary.

6 main engine cylinder and compressor cylinder lubricators, submerged and moving parts, rusted - now cleaned and repaired as necessary.

2 revolution counters and 2 tachometers for Port and Starboard Main Engines, rusted - now cleaned and repaired as necessary.

Port and Starboard Main Engine automatic arrangement on air starting gear, rusted - now cleaned and overhauled.

Crank case doors jointing saturated with sea water and oil fuel - now renewed.

Asbestos mattresses on exhaust pipes saturated with sea water and oil fuel - now 2 square feet of asbestos mattress lagging renewed.

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Port and Starboard Turbo-Blowers with valves and operating gear, splashed with sea water and oil fuel; Wire diaphragm of port blower, corroded - now blowers cleaned, valves and operating gear cleaned and overhauled and wire diaphragm of port blower renewed.

AUXILIARY ENGINES:-

No.1 (Starboard) and No.2 (Port Forward) Diesel Engines:-

Cylinder covers, valves & valves gear, rusted up - now cleaned & overhauled.
Camshaft and camshaft driving gear, rusted up - now cleaned and overhauled.
Cylinder liners rusted and slightly pitted - now cleaned, and polished.
Pistons and piston rings rusted up - now pistons cleaned and polished and piston rings renewed.
Connecting rods, gudgeon pins and bearings, slightly pitted, - now connecting rods and gudgeon pins cleaned and polished.
Crankshafts, journals and crank pins, slightly pitted - now journals and crankpins cleaned, polished, oil passages cleaned out and all bearings adjusted.
Fuel pumps, rusted up - now cleaned and overhauled.

No.3 (Port Aft) Diesel Engine:-

Cylinder covers, valves and valve gear, rusted up - now cleaned & overhauled.
Camshaft and camshaft driving gear, rusted up - now cleaned and overhauled.
Cylinder liners, rusted and slightly pitted and Nos.2 & 3 liners pitted and worn - now Nos.1, 4, 5 & 6 liners cleaned and polished and Nos.2 & 3 liners renewed.
Piston and piston rings, rusted up and Nos.2 & 3 pistons fractured in way of piston ring grooves - now Nos.1, 4, 5 & 6 pistons cleaned and polished and piston rings renewed, and Nos.2 & 3 pistons and rings renewed.
Connecting rods, gudgeon pins and bearings rusted and Nos.2 & 3 connecting rods, bent, - now Nos.1, 4, 5 & 6 connecting rods and gudgeon pins cleaned and polished and Nos.2 & 3 connecting rods renewed.
Crankshaft journals and crankpins, slightly pitted, - now journals and crankpins cleaned and polished, oil passages cleaned out and all bearings adjusted.
Fuel pump, rusted up - now cleaned and overhauled.

Nos.1, 2 & 3 Diesel Engine:-

All crankcase doors jointing, saturated - now renewed.
3 tachometers rusted up and driving belts rotted - now tachometers cleaned & overhauled and driving belts renewed.
3 sets of lubricator for cylinders, rusted up - now cleaned and repaired.
Asbestos rope lagging on 9" dia. exhaust pipes saturated with sea water and oil fuel - now 80 feet of asbestos rope lagging renewed.
Asbestos mattress lagging on 3 exhaust silencers, saturated with sea water and oil fuel - now 255 square feet renewed.

Inboard and Outboard Auxiliary Air Compressors:-

Cylinders, pistons, connecting rods and crankshafts, rusted up - now cleaned and polished and all bearings adjusted. H.P., M.P. and L.P. piston rings renewed and H.P., M.P. & L.P. suction and delivery valves cleaned and overhauled.

Asbestos lagging on 45 feet of piping, saturated with sea water and oil fuel - now renewed.

Oil Engine Driven Emergency Air Compressor:-

Oil engine and air compressor working parts, rusted up - now cleaned, polished and overhauled.

The following pumps submerged in sea water - now opened out, cleaned, overhauled and leather and rubber washers on flexible couplings renewed.

Two Jacket cooling water pumps.

Two Piston cooling water pumps.

Two Crosshead lubricating oil pumps.

Two Main bearing lubricating oil pumps.

Two Bilge pumps.

One Fire and General service pump.

One Hot salt water pump.

Two Fresh water pumps.

Two Oil fuel shifting pumps.

One oil fuel transfer pump.

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One Oil fuel transfer pump for purifier.

One oil fuel service pump.

One lubricating oil shifting pump.

Fire and sanitary pump casing pipe broken in way of suction - now renewed.

Three oil fuel and two lubricating oil purifiers, submerged in sea water - now opened out, cleaned, overhauled, driving shaft ball bearings renewed, driving belt and rubber washers in flexible couplings renewed.

One piston cooling water cooler and one lubricating oil cooler, submerged in sea water - now opened out and cleaned.

Workshop lathe, drilling and tool grinder splashed with sea water and oil fuel - now cleaned and overhauled.

Donkey boiler asbestos lagging and asbestos mats on lower side of boiler, saturated with sea water and oil fuel - now renewed.

Two feed pumps and two oil fuel unit pumps with heaters, splashed - now cleaned and adjusted.

Oil fuel hand shifting pump, rusted up, - now cleaned and overhauled.

Exhaust steam drain tank filled with sea water and oil fuel and float corroded - drain tank cleaned and float renewed.

Calorifier pump, submerged in sea water - now opened out and cleaned.

Foamite fire extinguishing installation, submerged in sea water - now cleaned and re-charged.

Refrigerating Machinery:-

Crankshafts of both compressor, submerged in sea water - now cleaned, polished bearings adjusted.

Top end pins, rusted and pitted - now skimmed up and brasses remetalled.

Two compressor piston rods, splashed - now ground up.

Two brine pumps and two circulating water pumps, submerged in sea water - now opened out and cleaned.

Piston cooling water and lubricating oil drain tanks, filled with sea water - now opened out and cleaned.

All piston cooling water and lubricating oil pipes and connections for main lines and drain tanks filled with sea water - now thoroughly cleaned out.

Miscellaneous Items:-

13 air receivers submerged or splashed - now opened out and cleaned and mountings overhauled.

Mandril for bedding in main engine top end brasses - now skimmed up to new diameter of top-end pins.

Two sets of spare top end bearings for main engine - now re-metalled and machined to suit new diameter of pins.

Two sets of spare top end bearings for main engine air compressor, now remetalled and machined to suit new diameter of pins.

Two spare sets of piston rod gland packing for main engine air compressors, - supplied, to suit new diameter of piston rods.

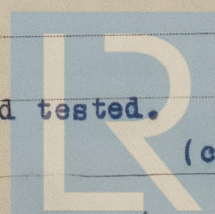
Engine room clock - now renewed.

Engine room desk - now renewed.

105 engine room pressure gauges - now overhauled and tested.

4 engine room pressure gauges - now renewed.

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ELECTRICAL INSTALLATION.Electrical Installation:-

Main switchboard on 2nd deck, splashed, - now cleaned, volt and ammeters tested and damaged insulating materials renewed.

Auxiliary Marble switchboard on Engine Room bottom platform, submerged in sea water - now switchboard renewed, ammeters, voltmeters, circuit breakers and switches repaired and connections renewed.

Three - 230 K.W. Main Generators, submerged in sea water - now Generators cleaned and overhauled, field and armature coils re-wound, commutators and brush gear overhauled.

The following motors submerged and now cleaned, overhauled, armatures and field coils re-wound, commutators and brush gears overhauled and after repair tested, and starters, controllers, regulators and switches cleaned and repaired or re-wired as necessary.

Two - 200 H.P. motors for auxiliary air compressors.

Two - 50 H.P. motors for jacket cooling water pumps.

Two - 45 H.P. motors for refrigerating compressors.

One - 36 H.P. motor for general service pump.

One - 36 H.P. motor for fire and sanitary pump.

Two - 28 H.P. motors for piston cooling water pumps.

One - 25 H.P. motor for ballast pump.

Two - 24 K.W. motors for lubricating oil pumps.

Two - 17.5 K.W. motors for fuel oil shifting pumps.

One - 16 H.P. motor for hot sanitary pump.

Two - 11 H.P. motors for bilge pumps.

Two - 10 H.P. motors for engine turning gears.

Two - 7.5 H.P. motors for fresh water pumps.

Two - 6 H.P. motors for refrigerating brine pumps.

One - 5 H.P. motor for work shop motor.

Two - 3 H.P. motors for lubricating oil purifiers.

Three - 3 H.P. motors for fuel oil purifiers.

One - 2 K.W. motor for fuel oil shifting pump.

One - 2 K.W. motor for fuel oil daily service pump.

One - 1.05 K.W. motor for fuel oil daily service pump.

One - 1.05 H.P. motor for lubricating oil shifting pump.

One - $\frac{3}{4}$ H.P. motor for fresh water circulating pump.

The following motors splashed with sea water and oil fuel - now cleaned, overhauled, dried, varnished, and brush gear overhauled, and afterwards tested. Starters, controllers, regulators and switches overhauled.

Two - 245 K.W. motors for Port and Starboard turbo-blowers.

Two - 35 K.W. motors generators for lighting.

Two - 35 K.W. motors for steering gear.

One - Direction indicator tell-tale transmitter for main engines.

Wiring for the above Generators and Motors to and from Main and Auxiliary Switch-boards submerged -- the various sizes and types of cables ^{now} renewed, in the same sizes and types as ^{previously} installed, except for the two motor generator sets, which cables being above the 3rd deck were undamaged.

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of Kobe.

Electric lighting wiring and fittings submerged - now approximately 140 lamps and fittings, 3 fuse boxes, 22 junction boxes and 64 switches removed, cleaed and repaired and the various sizes and types of cable renewed, in same sizes and types as now installed.

Alarm bells, fittings and connections to the jacket and piston cooling water pumps, lubricating oil pumps, steering gear and engine telegraphs, submerged - now repaired and renewed as necessary.

Port and Starboard Main Engine Exhaust Gas Pyrometers and connections - submerged - now pyrometers cleaned and overhauled and connections renewed.

3 Ammeters for generators placed on the pressure gauge board at the main engine control platform, submerged - now cleaned and repaired.

Upon completion of repairs the machinery was tested under full working conditions at sea on the 27th April 1940 with satisfactory results.

ARR