

REPORT ON OIL ENGINE MACHINERY

No. 652-A

3 JUN 1952

Date of writing Report 12-3 1952 When handed in at Local Office 12-3 1952 Port of YOKOHAMA
 No. in Survey held at YOKOHAMA, JAPAN Date, First Survey 30-3-51 Last Survey 15-2-1952
 Reg. Book. Single on the Twin Triple Quadruple Screw vessel M.V. "TOKYO MARU"
 Built at YOKOHAMA, JAPAN By whom built YOKOHAMA SHIPYARD & ENGINE WORKS EAST JAPAN HEAVY INDUSTRIES LTD.
 Engines made at YOKOHAMA, JAPAN By whom made " Yard No. 5781 When built 2-1952
 Donkey Boilers made at YOKOHAMA, JAPAN By whom made " Engine No. D3722 When made 12-1951
 Brake Horse Power 3600 (METRIC) Owners TOKYO SENPAKU Boiler No. 4338 When made 11-1951
 M.N. Power as per Rule 720 Is Refrigerating Machinery fitted for cargo purposes YES Port belonging to TOKYO
 Trade for which vessel is intended Is Electric Light fitted YES

OIL ENGINES, &c. — Type of Engines 25LSA YOKOHAMA MAN K6Z 72/130 P 2 or 4 stroke cycle 2 Single or double acting SINGLE
 Maximum pressure in cylinders 50 kg/cm² Diameter of cylinders 720 mm Length of stroke 1300 mm No. of cylinders 6 No. of cranks 6
 Mean Indicated Pressure 5.97 kg/cm² Ahead Firing Order in Cylinders 1-6-4-2-5-3 Span of bearings, adjacent to the crank, measured from inner edge to inner edge 960 mm Is there a bearing between each crank YES Revolutions per minute 107
 Flywheel dia 2550 mm Weight 3580 kg Moment of inertia of flywheel (lbs. in² or Kg. cm²) 14.7 x 10⁷ Means of ignition COMPRESSION Kind of fuel used DIESEL OIL
 Crank Shaft, {Solid forged dia. of journals as per Rule 448.7 mm as fitted 500 mm Crank pin dia 500 mm Crank webs Mid. length breadth 790 mm Thickness parallel to axis 300 mm
 {Semi built All built as fitted 500 mm Mid. length thickness 300 mm shrunk Thickness around eye-hole 222.5 mm
 Flywheel Shaft, diameter as per Rule 462 mm as fitted 500 mm Intermediate Shaft, diameter as per Rule 333 mm as fitted 343 mm Thrust Shaft, diameter at collars as fitted 500 mm
 Tube Shaft, diameter as per Rule — as fitted — Screw Shaft, diameter as per Rule 365.3 mm as fitted 370 mm Is the {tube} shaft fitted with a continuous liner {YES
 Bronze Liners, thickness in way of bushes as per Rule 18.8 mm as fitted 22 mm Thickness between bushes as per Rule 14.17 mm as fitted 17 mm 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 YES 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 tube shaft — If so, state type — Length of bearing in Stern Bush next to and supporting propeller 1500 mm
 Propeller, dia. 5000 mm Pitch 3925 mm No. of blades 4 Material MANGANESE BRONZE whether movable — Total developed surface 7.874 M²
 Moment of inertia of propeller (lbs. in² or Kg. cm²) 1165 x 10⁵ Kind of damper, if fitted —
 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 40 mm Are the cylinders fitted with safety valves YES Are the exhaust pipes and silencers water cooled lagged with non-conducting material LAGGED 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. 4 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. — Diameter — Stroke — Can one be overhauled while the other is at work —
 Pumps connected to the Main Bilge Line {No. and size 4, 100/160 M³/H x 70/35 M; 100 M³/H x 30 M; 100 M³/H x 35 M; 10 M³/H x 35 M.
 {How driven MOTOR DRIVEN MOTOR DRIVEN MOTOR DRIVEN MOTOR DRIVEN
 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 —
 Blast Pumps, No. and size 1-100 M³/H x 30 M Power Driven Lubricating Oil Pumps, including spare pump, No. and size 2-130 M³/H x 55 M
 two independent means arranged for circulating water through the Oil Cooler YES Suctions, connected to both main bilge pumps and auxiliary pumps, No. and size: — In machinery spaces 5-80 mm, 2-70 mm, 1-160 mm In pump room —
 holds, &c. NO.1 2-70 2-80 NO.2 2-80 NO.3 2-80 NO.4 2-80 NO.5 2-80
 Independent Power Pump Direct Suctions to the engine room bilges, No. and size STARBOARD SIDE: 2-80 mm, 1-160 mm; CENTER: 3-70 mm; PORTSIDE: 2-80 mm, 1-160 mm
 all the bilge suction pipes in holds and tunnel well fitted with strum-boxes YES Are the bilge suction pipes 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
 all Sea Connections fitted direct on the skin of the Ship YES Are they fitted with valves or cocks BOTH Are they fixed conveniently 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
 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
 pipes pass through the bunkers — How are they protected —
 pipes pass through the deep tanks FUEL OIL PIPE (PORT DEEP TANK ONLY) Have they been tested as per Rule YES
 all pipes, cocks, valves and pumps in connection with the machinery and all boiler mountings accessible at all times YES
 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 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
 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. — No. of stages — diameters — stroke — driven by —
 Auxiliary Air Compressors, No. 1 No. of stages 2 diameters 190, 190-170 mm stroke 150 mm driven by GENERATOR ENGINE
 Small Auxiliary Air Compressors, No. 1 No. of stages 2 diameters 190, 190-170 mm stroke 100 mm driven by MOTOR
 what provision is made for first charging the air receivers SMALL AUXILIARY AIR COMPRESSOR
 Suctioning Air Pumps, No. TANDEM, DOUBLE ACTING, DUPLEX diameter 800 mm stroke 1120 mm driven by MAN ENGINE
 Auxiliary Engines crank shafts, diameter as per Rule 128.8 mm No. 3 Position ENGINE ROOM PLATFORM, NO.1 STARBOARD SIDE, NO.2, 3 PORTSIDE
 as fitted 145 mm Is a report sent herewith YES

AIR RECEIVERS:—Have they been made under survey... YES State No. of report or certificate Y2451, Y2452, Y2453, Y2454

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

Injection Air Receivers, No. — Cubic capacity of each — Internal diameter — thickness — by Rules —
Seamless, welded or riveted longitudinal joint — Material — Range of tensile strength — Working pressure — Actual —

Starting Air Receivers, No. 2 Total cubic capacity 10000 LITRE X 2 Internal diameter 1500 mm thickness 25 mm by Rules 30.25 kg/cm²
Seamless, welded or riveted longitudinal joint RIVETED Material O. H. STEEL Range of tensile strength 32.3 % Working pressure 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 YES

PLANS. Are approved plans forwarded herewith for shafting 5-11-51 Receivers 7-8-51 (Kobe) Separate fuel tanks 10-9-51
(If not, state date of approval) Donkey boilers 22-11-51 General pumping arrangements 6-12-51 Pumping arrangements in machinery space 20-2-52 (BILGE LINE IN ENGINE)
Oil fuel burning arrangements 12-10-51 Date of approval 5-11-51

Have Torsional Vibration characteristics been approved YES

SPARE GEAR.

Has the spare gear required by the Rules been supplied YES
State the principal additional spare gear supplied 1- CYLINDER COVER, 6- FUEL INJECTORS, 1- CYL. LINER, 9 SETS - CYL. RUBBER PACKINGS

1- PISTON, 18- PISTON PACKING RINGS, 1- PISTON LEG, 12- CYL. COVER BOLTS.

1 SET- DRIVING GEAR (CAM, INTERMEDIATE CRANK SHAFT) 1 SET- CRANK PIN BEARING, 2 SETS - CRANK PIN BEARING BOLTS

4- MAIN BEARING BOLTS.

2- PROPELLER BLADES, 1 SET- EACH SIZE SHAFT COUPLING BOLT, 12- THRUST PADS.

The foregoing is a correct description, K. K. K. Manufacturer.

Dates of Survey while building
During progress of work in shops -- 1951: - MAR. 30, APR. 4, 7, 13, 17, 27, 28, MAY 8, 10, 14, 16, 24, 31, JUN. 2, 4, 11, 13, 16, 19, 21, 25, 30, JUL. 3, 4, 5, 9, 10, 11, 12, 14, 16, 18, 19, 20, 23, 25, 27, 30, 31, AUG. 1, 2, 5, 9, 10, 13, 14, 15, 16, 20, 21, 23, 25, 29, 30, 31, SEPT. 3, 4, 5, 6, 10, 11, 12, 14, 17, 18, OCT. 2, 5, 8, 11, 12, 15, 16, 17, 18, 19, 23, 25, 29, 31, NOV. 1, 2, 5, 6, 9, 13, 15, 16, 19, 20, 26, 29, DEC. 1, 12, 17, 19, 20
During erection on board vessel -- 1951: - DEC. 26, 1952: - JAN. 8, 16, 21, 25, 29, FEB. 4, 5, 6, 7, 8, 13, 15
Total No. of visits 113

Dates of examination of principal parts—Cylinders 12-11-51 Covers 15-11-51 pistons 19-11-51 Rods — Connecting rods 1-8-51

Crank shaft 16-6-51 Flywheel shaft 30-10-51 Thrust shaft 6-7-51 Intermediate shafts 4-11-51 Tube shaft —

Screw shaft 2-11-51 Propeller 24-11-51 Stern tube 22-11-51 Engine seatings 26-12-51 Engine holding down bolts 22-1-52

Completion of fitting sea connections 27-11-51 Completion of pumping arrangements 5-2-52 Engines tried under working conditions 2-2-52

Crank shaft, material O. H. STEEL Identification mark K-CK 196 H1 Flywheel shaft, material, O. H. STEEL Identification mark Y1864 RT

Thrust shaft, material O. H. STEEL Identification mark Y1734 RT Intermediate shafts, material O. H. STEEL Identification marks Y1865 A.B.C. YK, Y1866 YK, Y1867

Tube shaft, material — Identification mark — Screw shaft, material O. H. STEEL Identification mark KF981 MS

Identification marks on air receivers NO.1 MAIN Y2451 RT, NO.2 MAIN Y2452 RT, AUX. Y2453 YK, EMERGENCY Y2454 YK

Welded receivers, state Makers' Name —
Is the flash point of the oil to be used over 150°F YES

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

Description of fire extinguishing apparatus fitted FOAM PORTABLE TYPE, CO₂ TYPE, DACK CONTROL IN ENGINE ROOM & IN WAY OF DONKEY BOILER

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo NO If so, have the requirements of the Rules been complied with —

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 — If so, state name of vessel —

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

THIS ENGINE HAS BEEN CONSTRUCTED UNDER THE SUPERVISION OF THE SOCIETY'S SURVEYORS IN ACCORDANCE WITH THE RULES AND APPROVED PLANS, THE QUALITY OF WORKMANSHIP AND MATERIALS H

BEEN FOUND SATISFACTORY

THE ENGINE WAS EXAMINED UNDER FULL LOAD WORKING CONDITION IN THE SHOP AND FOUND

SATISFACTORY.

THE MACHINERY OF THIS VESSEL HAS BEEN SATISFACTORILY INSTALLED IN THE VESSEL AND TRIED UND

FULL WORKING CONDITION.

IT IS SUBMITTED THAT THE MACHINERY OF THIS VESSEL IS ELIGIBLE TO BE CLASSED WITH THIS SOCI

WITH NOTATION OF + LMC 2.52 SUBJECT TO THE ENTAILURES OF THE PORTSIDE INBOARD AND OUTBOARD

GENERATORS BEING SPECIALLY EXAMINED BEFORE THE END OF AUGUST 1952

The amount of Entry Fee ... £ 547,500.- When applied for 19
Special ... £ : When received 19
Donkey Boiler Fee... £ 25,200.-
Travelling Expenses (if any) £ 12,500.-

Committee's Minute FRI. 27 JUN 1952
Assigned + LMC 2.52 Oil Eng. Subject (with torsional endorsement).
C.L. DB 100lb.

Lloyd's Register Foundation