

REPORT ON OIL ENGINE MACHINERY.

No. 67629

Received at London Office

4 OCT 1943

RECEIVED

Date of writing Report 15 OCT 1943

When handed in at Local Office

9. 10. 1943 Port of Glasgow

Date, First Survey (1942) June 19th Last Survey 5th Oct. 1943

No. in Survey held at Reg. Book.

Glasgow

Number of Visits 78

on the Single Turn Triple Quadruple Screw vessel

"EMPIRE MACKAY"

Tons: Gross 8908 Net 5658

Built at Glasgow By whom built Harland & Wolff, Ltd. Yard No. 1167 When built 1943
 Engines made at Glasgow By whom made Harland & Wolff, Ltd. Engine No. 1167 When made 1943
 Donkey Boilers made at Hyde By whom made Joseph Adamson & Co. Ltd Boiler No. 2588 PORT 2585 STARBU When made 1943
 Brake Horse Power 3200 Owners Ministry of War Transport Port belonging to Glasgow.
 Nom. Horse Power as per Rule 490 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted yes
 Trade for which vessel is intended Tanker

OIL ENGINES, &c. Type of Engines Heavy oil, Airless injection 2 or 4 stroke cycle 4 Single or double acting S.A.

Maximum pressure in cylinders 700 lb. Diameter of cylinders 740 mm. Length of stroke 1500 No. of cylinders 6 No. of cranks 6
Mean Indicated Pressure 128 lb.

Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 972 mm. Is there a bearing between each crank yes
Revolutions per minute 115 Flywheel dia. 2489 mm. Weight 2590 Kgs. Means of ignition Compression Kind of fuel used Diesel oil.

Crank Shaft, Solid forged dia. of journals as per Rule 490 mm. Crank pin dia. 505 mm. Mid. length breadth 980 mm. Thickness parallel to axis 310 mm.
Semi built as fitted 505 mm. Crank Webs BORED. 230 mm. Mid. length thickness 310 shrunk Thickness around eyehole 292.5
All built as fitted BORED 115 mm.

Flywheel Shaft, diameter as per Rule 13.15 Intermediate Shafts, diameter as per Rule 18 Thrust Shaft, diameter at collars as per Rule 351 mm.
as fitted 18 as fitted 18 as fitted 454

Tube Shaft, diameter as per Rule 14.48 Is the screw shaft fitted with a continuous liner yes.
as fitted 16 as fitted 16

Bronze Liners, thickness in way of bushes as per Rule 4 13/16 Thickness between bushes as per Rule 16 21/32 Is the after end of the liner made watertight in the propeller boss yes
as fitted 4 13/16 as fitted 16 21/32

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 yes Is an approved Oil Gland or other appliance fitted at the after end of the tube -

shaft no If so, state type 11.6 1/2 Length of Bearing in Stern Bush next to and supporting propeller 5'-0"
Propeller, dia. 16'-0" Pitch 9'-6" No. of blades 4 Material Brnze whether Moveable no Total Developed Surface 81 sq. feet

Method of reversing Engines Direct Is a governor or other arrangement fitted to prevent racing of the engine when disengaged yes Means of lubrication forced
Thickness of cylinder liners 53 lb Are the cylinders fitted with safety valves yes Are the exhaust pipes and silencers water cooled or 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 yes
Cooling Water Pumps, No. 1 @ 170 tons per hour, 2 @ 120 tons 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 80 tons per hour Stroke Steadily Bilge & Sanitary, 80 tons per hour Can one be overhauled while the other is at work Ballast, 120 tons per hour
Pumps connected to the Main Bilge Line { No. and Size one Bilge & sanitary, 80 tons per hour How driven Main Engine Steam Steam

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 -

Ballast Pumps, No. and size one, 120 tons per hour Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size 2 each 100 tons per hour.
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 Port 3 1/2"; Starb. 3 1/2"; aft. well 3 1/2". In Pump Room -

In Holds, &c. yes Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 3 @ 6"; " Oil Fuel transfer pump suction from gutterway, P.S. 2" left hand, 2 1/2"
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 Steel stools 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 yes How are they protected -
What pipes pass through the deep tanks yes 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 - worked from -

If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork yes

Main Air Compressors, No. 2 No. of stages 2 Diameters 280 + 245 Stroke 130 mm. Driven by Steam engine.
Auxiliary Air Compressors, No. 2 No. of stages 2 Diameters 280 + 245 Stroke 130 mm. Driven by -
Small Auxiliary Air Compressors, No. 2 No. of stages 2 Diameters 280 + 245 Stroke 130 mm. Driven by -

What provision is made for first Charging the Air Receivers Steam driven compressors.
Scavenging Air Pumps, No. 2 Diameter all auxiliaries steam driven Stroke - Driven by -

Auxiliary Engines crank shafts, diameter as per Rule all auxiliaries steam driven Position -
Have the Auxiliary Engines been constructed under special survey yes Is a report sent herewith yes



002498-002505-0247

AIR RECEIVERS: - Have they been made under survey *yes* State No. of Report or Certificate *Z-837* Rpt.

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

Seamless, lap welded or riveted longitudinal joint Material Range of tensile strength Working pressure

Starting Air Receivers, No. *2* Total cubic capacity *900 cu ft.* Internal diameter *6'-0 5/16"* thickness *Shell 28/32 tons. Ends 1 5/32 + 1/16"*

Seamless, lap welded or riveted longitudinal joint *Riveted* Material *Steel* Range of tensile strength *Ends 28/30* Working pressure *by Rules 356 lb Actual 356*

IS A DONKEY BOILER FITTED? *yes* If so, is a report now forwarded?

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

PLANS. Are approved plans forwarded herewith for Shafting *yes* Receivers *yes* Separate Fuel Tanks *yes*

Donkey Boilers *No. Made at Manchester* General Pumping Arrangements *yes* Pumping Arrangements in Machinery Space *yes*

Oil Fuel Burning Arrangements *yes*

SPARE GEAR.

Has the spare gear required by the Rules been supplied *yes*

State the principal additional spare gear supplied *As per attached list. (Under separate cover today)*

The foregoing is a correct description.

FOR HARLAND AND WOLFF, LIMITED

Wm. Wright Manufacturer.

Dates of Survey while building: During progress of work in shops - (1942) June 19, Sept. 8, 24, Oct. 9, 28, Nov. 14, Dec. 22. (1943) Jan. 18, 22, 27, Feb. 5, 8, 9, 11, 16, Mar. 4, 9, 12, 19, 23, Apr. 16, 19, 20, 21, 23, 27, May 3, 7, 10, 11, 12, 13, 14, 17, 18, 19, 20, 21, 24, 25, 27, June 1, 3, 4, 7, 14, 15, 16, 22, 22, July 14, 16, 19, 21, 22, 28, 29, Aug. 4, 6, 10, 13, 16, 18, 24, 25, 27, 30, Sept. 2, 6, 7, 8, 16, 23, 28, Oct. 5. Total No. of visits *78*

Dates of Examination of principal parts - Cylinders *25-5-43* Covers *25-5-43* Pistons *3-6-43* Rods *3-6-43* Connecting rods *7-6-43*

Crank shaft *4-3-43* Flywheel shaft *✓* Thrust shaft *4-3-43* Intermediate shafts *5-5-43* Tube shaft *✓*

Screw shaft *17-5-43* Propeller *17-5-43* Stern tube *17-5-43* Engine seatings *10-5-43* Engines holding down bolts *6-8-43*

Completion of fitting sea connections *14-6-43* Completion of pumping arrangements *5-10-43* Engines tried under working conditions *5-10-43*

Crank shaft, Material *Steel* Identification Mark *1167 P.F.* Flywheel shaft, Material *✓* Identification Mark *✓*

Thrust shaft, Material *Steel* Identification Mark *S-4989 P.F.* Intermediate shafts, Material *Steel* Identification Marks *S-5054 P.F.*

Tube shaft, Material *✓* Identification Mark *✓* Screw shaft, Material *Steel* Identification Mark *Working, S-5081 Spare, S-5176*

Identification Marks on Air Receivers *For Lloyd's R.S. 2-9-42; apt. Lloyd's No. 230 R.S. 2-9-42.*

Steam pipes *Bessemer Steel. Flanges stamped accordingly.*

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 *Perforated steam pipes under boilers; and as per B.O.T. & Merchant Shipping Regulations*

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo *✓* 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 *yes* If so, state name of vessel *"British Patience", Glasgow Rpt No 672*

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

The machinery of this vessel has been built under Special Survey and in accordance with the approved plans and the Rules of this Society.

The materials and workmanship are good.

The machinery has been efficiently secured in position on board the vessel, and afterwards tried under full working conditions with satisfactory results.

The machinery is eligible in my opinion to be classed in the Register Book with notations of -1-LMC 10, 43. C.L. 2 DR. WP 150 lbs.

The amount of Entry Fee .. £ *5* : - : When applied for,

Special £ *98* : *10* : *12 OCT 1943*

Donkey Boiler Fee £ : : When received,

Travelling Expenses (if any) £ : : 19

Committee's Minute *GLASGOW 12 OCT 1943*

Assigned *-1-LMC 10.43 All Eng 2 DR 150 lb*

P. Fitzgerald & G. E. Murdoch
Engineer Surveyor to Lloyd's Register of Shipping.



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9-10-43

certificate (if required) to be sent to Glasgow

(The Surveyors are requested not to write on or below the space for Committee's Minute.)