

REPORT ON OIL ENGINE MACHINERY

No. 104073

Received at London Office 21 NOV 1946

NEWCASTLE-ON-TYNE

Date of writing Report 19 11 When handed in at Local Office 11 11 10 46 Port of NEWCASTLE-ON-TYNE
 No. in Survey held at Newcastle on Tyne Date, First Survey (1945) June 25 Last Survey Oct. 31st 1946
 Reg. Book 85891 Number of Visits 112

85891 on the Single Twin Triple Quadruple Screw vessel M.V. BRITISH EARL Tons Gross 8573.44
Net 4908.97

Built at Walker on Tyne By whom built Swan Hunter & Wigham Reith Ltd No. 1772 When built 1946
 Engines made at Neptune Works Walker By whom made " Engine No. 1772 When made 1946
 Donkey Boilers made at " By whom made " Boiler No. 1772 When made 1946
 Brake Horse Power 3100 Owners British Tanker Co Ltd Port belonging to London
 Nom. Horse Power as per Rule 687 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes
 Trade for which vessel is intended Carrying petroleum in bulk

OIL ENGINES, &c. — Type of Engines Swan Hunter-Doyford opposed piston 4 stroke cycle 2 Single or double acting Single
 Maximum pressure in cylinders 568 lb/sq in Diameter of cylinders 600 mm Length of stroke 2320 mm No. of cylinders 4 No. of cranks 4 THREE THROW
 Mean Indicated Pressure 86 lb/sq in BETWEEN CENTRES OF SIDE RODS BETWEEN
 Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 940 mm 1200 mm Is there a bearing between each crank EACH 3-THROW
 Revolutions per minute 105 Flywheel dia. A-2450 mm Weight A-3.24 Tons Means of ignition Compression Kind of fuel used Heavy oil

Crank Shaft, Solid forged Semi built All built dia. of journals as per Rule 425 mm as fitted 450 mm Crank pin dia. 450 mm Crank Webs Mid. length breadth 650 mm Thickness parallel to axis 255 mm
 Mid. length thickness 255 mm shrunk Thickness around eye-hole 200 mm

Flywheel Shaft, diameter as per Rule 425 mm as fitted 450 mm Intermediate Shafts, diameter as per Rule 13 1/8" as fitted 18" Thrust Shaft, diameter at collars as per Rule 425 mm as fitted 450 mm

Tube Shaft, diameter as per Rule 14.5" as fitted 16 7/8" Is the tube screw shaft fitted with a continuous liner Yes

Bronze Liners, thickness in way of bushes as per Rule .016" as fitted 21/32" Thickness between bushes as per Rule " as fitted " 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 No If so, state type " Length of Bearing in Stern Bush next to and supporting propeller 5'-8 1/2"

Propeller, dia. 16'-0" Pitch 12'-0" No. of blades 4 Material Bronze whether Moveable No Total Developed Surface 90 sq. feet
 Method of reversing Engines Compression Is a governor or other arrangement fitted to prevent racing of the engine when disengaged Yes Means of lubrication Forced

Thickness of cylinder liners 25 mm Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled or lagged with non-conducting material Sagged 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. Two - DISTILLED WATER 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. Yes Diameter Yes Stroke Yes Can one be overhauled while the other is at work Yes

Pumps connected to the Main Bilge Line { No. and Size (1) 10x11x10" (1) 8x8x8" (1) 8x8x8" How driven 190T/HR Steam 100T/HR

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 Yes
 Ballast Pumps, No. and size (1) 10x11x10" Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size (1) 8x7x10" - 30T/HR ONE DRIVEN BY M.E. 100x608 mm - 31T/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 3 - 3 1/2" dia. 1 - 3" dia E.R. Cofferdam In Pump Room 2 - 4" dia

In Holds, &c. Yes Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1 - 6" dia. 1 - 5" 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

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 Yes How are they protected Yes
 What pipes pass through the deep tanks Yes Have they been tested as per Rule Yes

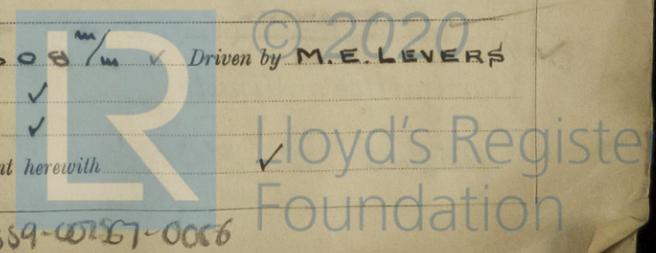
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes
 Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another Yes Is the Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Yes

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. Yes No. of stages Yes Diameters 11 1/2" - 23 1/4" Stroke Yes Driven by Yes

Auxiliary Air Compressors, No. 2 No. of stages 3 Diameters 11 1/2" - 9 1/4" - 2 3/4" Stroke 7" Driven by Steam engine
 Small Auxiliary Air Compressors, No. Yes No. of stages Yes Diameters Yes Stroke Yes Driven by Yes

What provision is made for first Charging the Air Receivers Auxiliary compressors
 Scavenging Air Pumps, No. One double acting Diameter 1960 mm Stroke 608 mm Driven by M.E. LEVERS

Auxiliary Engines crank shafts, diameter as per Rule Yes No. Yes Position Yes
 Have the Auxiliary Engines been constructed under special survey Yes Is a report sent herewith Yes



002559-00267-0006

AIR RECEIVERS:—Have they been made under survey Yes State No. of Report or Certificate ✓
 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 280 Cub ft Internal diameter 4-1/2" thickness 1/22"
 Seamless, lap welded or riveted longitudinal joint Riveted Material Steel Range of tensile strength 29-30 Tons Working pressure 602 lbs sq
 Actual 600 lbs sq

IS A DONKEY BOILER FITTED? Yes - Two 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 Yes Receivers Yes Separate Fuel Tanks Yes
 Donkey Boilers Yes 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 1 Spare screw shaft. 1 Main spherical bearing complete. 2 Side rod bolts + nuts. 1 Upper. 1 Lower piston skirt. 1 Non return starting air valve. 1 Relief valve. 4 Scrapers rings. 6 Piston water service elbows. 6 Rubber hose for P.W.S. 5 Piston rings. 1-6 Feed lubricator 2 complete sets of springs for each type. 2 complete sets of joints for each type.

The foregoing is a correct description,
W. H. HUNTER, & WIGHAM RICHARDSON LTD P. L. Lacey Manufacturer.

Dates of Survey while building	During progress of work in shops--	1945 June 26, July 9, 12, 13, 16, 20, 23 Aug. 9, 13, 17, 20, 27 Sept. 6, 10, 12, 13, 14, 18, 20, 21, 28 Oct. 1, 4, 5, 12, 15, 18, 23, 24, 29, 30
	During erection on board vessel---	Nov. 9, 13, 14, 19, 30, Dec. 18 (1946) Jan. 13, 21, 28 Feb. 11, 20, Mar. 4, 11, 19, 26 Apr. 2, 5, 18, 23, 24, 27 May 1, 2, 7, 10, 12, 16, 17, 22, 24, 31 June 7, 11, 12, 13, 14, 21, 25, 27, 28 July 1, 3, 10, 11, 12, 15, 18, 19, 22, 26 Aug. 7, 9, 12, 13, 15, 16, 19, 20, 23, 28 Sept. 3, 9, 11, 12, 17, 23, 24, 26, 27 Oct. 1, 2, 3, 7, 10, 14, 16, 18, 21, 28, 30, 31
	Total No. of visits	<u>112</u>

Dates of Examination of principal parts—Cylinders 6-9-45 Covers ✓ Pistons 1-10-45 Rods 1-10-45 Connecting rods 14-11-45
 Crank shaft 13-9-45 Flywheel shaft 13-9-45 Thrust shaft 13-9-45 Intermediate shafts 25-6-45 Tube shaft ✓
 Screw shaft 13-5-46 Propeller 21-6-46 Stern tube 13-6-46 Engine seatings 16-10-46 Engines holding down bolts 16-10-46
21-10-46
 Completion of fitting sea connections 27-6-46 Completion of pumping arrangements 21-10-46 Engines tried under working conditions 31-10-46
 Crank shaft, Material O.H. Steel Identification Mark 14253 G.H.M. Flywheel shaft, Material O.H. Steel Identification Mark 14253 G.H.M.
 Thrust shaft, Material O.H. Steel Identification Mark 14253 G.H.M. Intermediate shafts, Material O.H. Steel Identification Marks 14216 H.A.I. 669
 Tube shaft, Material ✓ Identification Mark ✓ Screw shaft, Material O.H. Steel Identification Mark 14612 H.A.I. 661

LLOYD'S TEST
 T.P. 800 lbs sq
 W.P. 600 lbs sq
 16-5-46 J.H.M.

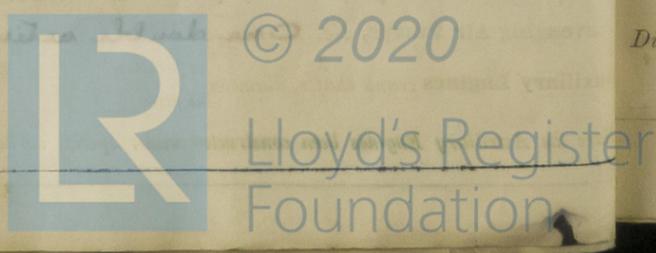
Is the flash point of the oil to be used over 150° F. Yes
 Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with Yes
 Is the vessel (not being an oil tanker) fitted for carrying oil as cargo Yes If so, have the requirements of the Rules been complied with Yes
 If 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 EMPIRE M^c CABE

General Remarks (State quality of workmanship, opinions as to class, etc.)
The machinery of this vessel has been constructed under special survey in accordance with rule requirements & approved plans.
Materials & workmanship are good.
The machinery was satisfactorily tested on mooring & sea trials & in my opinion is eligible for classification with records of + L.M.C. 10, 46 T.S.C.L. 20.B. 150 lbs sq.

The amount of Entry Fee	.. £ 6 : 0 :	When applied for,
Special	... £ 109 : 7 :	<u>13 NOV 1945</u>
Donkey Boiler Fee	... £ 26 : 14 :	When received,
AIR RECEIVERS Travelling Expenses (if any)	£ 4 : 4 :	<u>19</u>

J. H. Matthews
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute
 Assigned + LMC 10, 46 Oil Eng.
C.L. 20.B. 150 lb.



Certificate (if required) to be sent to Newcastle-on-Tyne (The Surveyors are requested not to write on or below the space for Committee's Minute.)

MLD

FRI 13 DEC 1946