

REPORT ON OIL ENGINE MACHINERY.

No. 16667
14 AUG 1928

Date of writing Report 28 July 1928 When handed in at Local Office 11.8.28 Port of Hartlepool
 No. in Survey held at Hartlepool Date, First Survey 20 May 27 Last Survey 10 Aug 1928
 Reg. Book. Single on the Twin Triple Screw vessels "BRITISH JUSTICE" Tons { Gross 136 Net 136
 Built at Newcastle By whom built Palmers S.B. Co. Ltd. Yard No. 977 When built 1928
 Engines made at Hartlepool By whom made Richardsons Westgarth Engine No. 2667 When made 1928
 Donkey Boilers made at do By whom made McC & Co Ltd Boiler No. 2667 When made 1928
 Brake Horse Power 654 Owners Port belonging to
 Nom. Horse Power as per Rule 654 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

IL ENGINES, &c.—Type of Engines Doxford opposed piston 2 or 4 stroke cycle 2 Single or double acting single
 Maximum pressure in cylinders 570 lb No. of cylinders 4 Diameter of cylinders 580 mm 22 1/8" No. of cranks 4 3 throw Length of stroke 1160 mm 45 3/8"
 Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 1050 mm Is there a bearing between each crank yes
 Revolutions per minute 80 Flywheel dia. 8'-0" Weight 13 tons Means of ignition Compression Kind of fuel used Diesel oil
 Crank Shaft, dia. of journals as per Rule 422 mm Crank pin dia. 460 mm Crank Webs Mid. length breadth 650 mm Thickness parallel to axis 260 mm
 as fitted 430 mm Mid. length thickness 260 mm Thickness around eye hole 190 mm
 Flywheel Shafts, diameter as per Rule 422 mm Intermediate Shafts, diameter as per Rule 14 1/4" Thrust Shaft, diameter at collars as per Rule 400 mm
 as fitted 430 mm as fitted 15" as fitted 430 mm
 Tube Shafts, diameter as per Rule Screw Shaft, diameter as per Rule 15.66" Is the tube shaft fitted with a continuous liner yes
 as fitted 7.8" as fitted 16 1/4" as fitted 5.85"
 Bronze Liners, thickness in way of bushes as per Rule 7/8" Thickness between bushes as per rule 13/16" 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
 Length of Bearing in Stern Bush next to and supporting propeller 5'-5 1/4"
 Propeller, dia. 17'-0" Pitch 15'-9" No. of blades 4 Material Bronze whether Moveable no Total Developed Surface 94 sq. feet
 Method of reversing Engines hand Is a governor or other arrangement fitted to prevent racing of the engine when declutched yes Means of lubrication forced
 Thickness of cylinder liners 25 mm 1" 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. 2 Is the sea suction provided with an efficient strainer which can be cleared within the vessel yes
 Bilge Pumps fitted to the Main Engines, No. ✓ Diameter ✓ Stroke ✓ Can one be overhauled while the other is at work yes
 Pumps connected to the Main Bilge Line { No. and Size 1 7x8x8 duplex 1 60 ton electric
 How driven steam
 Ballast Pumps, No. and size 1 10x10x12 duplex Lubricating Oil Pumps, including Spare Pump, No. and size 1 6x6 dec. 1 7x8x18 Stm.
 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 Engine and Boiler Room 2 of 3 1/2 2 of 3 1/2 transfer pump from oil bilges.
 In Holds, &c. 1 of 8" Ballast P. 1 of 5" Stm bilge P. 1 of 3 1/2" dec. bilge P.
 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes yes Are the Bilge Suctions in the Machinery Space 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 yes
 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 above
 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 ✓ 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 ✓
 Main Air Compressors, No. 1 No. of stages 3 Diameters 11 1/2" Stroke 7" Driven by steam
 Auxiliary Air Compressors, No. 2 No. of stages 2 Diameters 3 1/2 x 8" Stroke 6 Driven by electric
 Small Auxiliary Air Compressors, No. ✓ No. of stages ✓ Diameters ✓ Stroke ✓ Driven by ✓
 Scavenging Air Pumps, No. 1 Diameter 1580 mm Stroke 1040 mm Driven by main engine
 Auxiliary Engines crank shafts, diameter as per Rule ✓ as fitted ✓

AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule Relief valve on compressors and safety valve on charging pipe.
 Can the internal surfaces of the receivers be examined yes What means are provided for cleaning their inner surfaces access by manhole
 Is there a drain arrangement 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 ✓
 Starting Air Receivers, No. 2 Total cubic capacity 220 cuft. Internal diameter 3'-6" thickness 1 1/2"
 Seamless, lap welded or riveted longitudinal joint riveted Material steel Range of tensile strength 28/32 Working pressure by Rules 600 lb.

and waste heat boiler
IS A DONKEY BOILER, FITTED? *yes* If so, is a report now forwarded? *yes*
HYDRAULIC TESTS:—

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS	<i>Plain cylindrical form.</i>		<i>no tests</i>		
COVERS	<i>none</i>				
JACKETS	<i>8.5.28.</i>	<i>5lbs</i>	<i>30lbs</i>	<i>R.D.S.</i>	
PISTON WATER PASSAGES	<i>16.19.4.28</i>	<i>30lbs</i>	<i>100lbs</i>	<i>R.D.S. & A.D.</i>	
MAIN COMPRESSORS—1st STAGE	<i>✓</i>				
2nd	<i>✓</i>				
3rd	<i>✓</i>				
AIR RECEIVERS—STARTING	<i>15.17.5.28</i>	<i>600lbs</i>	<i>800lbs.</i>	<i>R.D.S.</i>	
INJECTION	<i>✓</i>				
AIR PIPES	<i>21.5.28—18.7.28</i>	<i>600lbs</i>	<i>900lbs</i>	<i>R.D.S. & A.D.</i>	
FUEL PIPES	<i>24.7.28</i>	<i>8,000lbs</i>	<i>12,000lbs</i>	<i>✓</i>	<i>Tested complete</i>
FUEL PUMPS	<i>24.7.28.</i>	<i>8,000lbs</i>	<i>12,000lbs</i>	<i>✓</i>	<i>in place.</i>
SILENCER	<i>Lagged. open to atmosphere. no test</i>				
WATER JACKET	<i>none</i>				
SEPARATE FUEL TANKS	<i>19.1.28</i>		<i>10 lbs.</i>	<i>A.L. & J.S.</i>	<i>at Manchester.</i>

PLANS. Are approved plans forwarded herewith for Shafting *Sent with duplicate* Receivers *yes* Separate Tanks *Sent with duplicate*
(If not, state date of approval)
Donkey Boilers *yes* General Pumping Arrangements *ditto* Oil Fuel Burning Arrangements *ditto*

SPARE GEAR *1 Cylinder liner. 1 piston complete. 21 piston rings. 2 top end & 2 bottom end bolts & nuts for centre connec. rod. 2 do & 2 do for side con. rods. 2 bolts & nuts for side rods. 2 main bearing studs & nuts. 1 set crank shaft coupling bolts & nuts. 1 set inter. shaft ditto. 2 spur wheels & 1 bevel wheel for cam shaft drive. 4 fuel valves & springs. 1 air starting valve. 1 relief valve complete. 2 scavenge pump valves complete. 1 fuel valve body. 1 straight shaft for crank shaft. 1 propeller shaft. 1 cast iron propeller. A number of springs for all parts. Assorted bolts & nuts. For compressors 1 set bearing brasses. 1 set valves. 1 set air piston springs. For oil burning units various spare parts. For bilge & transfer pumps. 1 set valves for ca. Pipes, couplings &c for H.R. fuel system.*
The foregoing is a correct description.
FOR RICHARDSONS, WESTGARTH & CO. LIMITED
Manufacturer.

Dates of Survey while building
During progress of work in shops—*May 20.22.26.31* MANAGING DIRECTOR *June 1.13.20.23.29* *Aug 23.30* *Sept. 5.7.19.27.28* *Oct. 4.7.12.17.19.21.24.28.29.31* *Nov. 1.2.3.7.8.9.11.15.16*
During erection on board vessel—*17.18.21.22.23.24.25.29.30* *Dec. 2.5.6.7.8.9.12.13.14.27.28.29.30* *1928 Jan. 4.5.6.9.10.11.12.17.18.23.31* *Feb. 7.8.16.17.21.22*
Total No. of visits *136*

Dates of Examination of principal parts—Cylinders *7.10.27-34.28* Covers *✓* Pistons *30.11.27-19.4.28* Rods *7.10.27-26.4.28* Connecting rods *4.10.27-10.1.28*

Crank shaft *10.1-7.3.28* Flywheel shaft *12.4.28* Thrust shaft *10.1-12.4.28* Intermediate shafts *1.3-15.6.28* Tube shaft *✓*

Screw shaft *12.3-9.5.28* Propeller *30.4-9.5.28* Stern tube *29.2-20.4.28* Engine seatings *1.6.28* Engines holding down bolts *26.6-5.7.28*

Completion of fitting sea connections *Newcastle* Completion of pumping arrangements *24.7.28* Engines tried under working conditions *10.8.28*

Crank shaft, Material *S.M. Engd. Steel* Identification Mark *6359 C.R.H.* Flywheel shaft, Material *S.M. Eng. Steel* Identification Mark *6410 C.R.H.*

Thrust shaft, Material *ditto* Identification Mark *6410 C.R.H.* Intermediate shafts, Material *ditto* Identification Marks *273 P.K.*

Tube shaft, Material *✓* Identification Mark *✓* Screw shaft, Material *ditto* Identification Mark *274 P.K.*

Is the flash point of the oil to be used over 150° F. *yes*

Is this machinery duplicate of a previous case *yes* If so, state name of vessel *"British Freedom"*

General Remarks (State quality of workmanship, opinions as to class, &c. *This vessel's machinery has been built and installed under Special Survey. The material and workmanship are good and efficient.*

On completion it was tried under full working conditions at sea and in our opinion is eligible to have the notation *LMC 8.28.*

The amount of Entry Fee ... £ *6 : 0 :* When applied for, *13.8.28*
Special ... £ *107 : 14 :*
Donkey Boiler Fee ... £ : : When received, *22/8/28*
Travelling Expenses (if any) £ : :
R.D. Shilston, & A. Daintith.
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI. 24 AUG 1928*

Assigned *thurs 8.28* *CL*

Oil Engines *2 AB-15016* CERTIFICATE WRITTEN