

REPORT ON OIL ENGINE MACHINERY.

No. 43701

WFO. 11 JUN. 1924

Received at London Office

Date of writing Report 30th May 1924 When handed in at Local Office 2.6.1924 Port of Glasgow.

No. in Survey held at Glasgow Date, First Survey 26th Oct 1923 Last Survey 29th May 1924
Reg. Book. Number of Visits 60

on the ^{Single} Twin } Screw vessel: "INVERBANK"
_{Triple}

Tons { Gross 5149
Net 3158

Master Built at Glasgow By whom built Harland & Wolff Ltd. Yard No. 6439 When built 1924

Engines made at Glasgow By whom made Harland & Wolff Ltd. Engine No. 613 When made 1924

Donkey Boilers made at Belfast By whom made Harland & Wolff Ltd. Boiler No. 834 When made 1924

Brake Horse Power 2300 Owners Messrs Andrew Weir & Co (Bank Line) Port belonging to

Nom. Horse Power as per Rule 567 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

OIL ENGINES, &c.—Type of Engines DIESEL 2 or 4 stroke cycle 4 Single or double acting SINGLE

Maximum pressure in cylinders 500 lbs/sq. in. No. of cylinders 12 No. of cranks 12 Diameter of cylinders 630 mm

Length of stroke 960 mm Revolutions per minute 125 Means of ignition COMPRESSION Kind of fuel used ABOVE 150°F.

Is there a bearing between each crank YES Span of bearings (Page 92, Section 2, par. 7 of Rules) 872 mm

Distance between centres of main bearings 1300 mm Is a flywheel fitted YES Diameter of crank shaft journals as per Rule 376 mm as fitted 384 mm

Diameter of crank pins 384 mm Breadth of crank webs as per Rule 500 mm as fitted 650 mm Thickness of ditto as per Rule 236 mm as fitted 250 mm

Diameter of flywheel shaft as per Rule 376 mm as fitted 384 mm Diameter of tunnel shaft as per Rule 9 3/4" as fitted 10" Diameter of thrust shaft as per Rule 10 1/4" as fitted 11 1/8"

Diameter of screw shaft as per Rule 10.43" as fitted 11" Is the screw shaft fitted with a continuous liner the whole length of the stern tube YES

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 joints burned 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 If without liners, is the shaft arranged to run in oil YES

Type of outer gland fitted to stern tube WOOD LINED. No O.G. Length of stern bush 4'-2" Diameter of propeller 11'-9"

Pitch of propeller 10'-6" MEN 9'-9" TO 11'-3" No. of blades 3 EACH state whether moveable YES Total surface 84 square feet

Method of reversing AIR Is a governor or other arrangement fitted to prevent racing of the engine when decelerated YES Thickness of cylinder liners TOP 50 mm BOT 35 mm

Are the cylinders fitted with safety valves YES Means of lubrication FORCED & SIGHT FEED Are the exhaust pipes and silencers water cooled or lagged with non-conducting material YES If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine YES

No. of cooling water pumps 2 Is the sea suction provided with an efficient strainer which can be cleared within the vessel YES

No. of bilge pumps fitted to the main engines No. of auxiliary pumps connected to the main bilge lines 3 How driven ELECTRIC MOTOR

Sizes of pumps CALCULATING 4 1/2" CENTRIFUGAL BALLAST 9" x 9" x 11" STROKE No. and sizes of suction pipes connected to both main bilge pumps and auxiliary bilge pumps:—In engine room 3 @ 3 1/2" x 1-2 1/2" TUNNEL WELL and in holds, etc. 4 @ 2 1/2" Cofferdam 2 @ 2 1/2" 3 @ 3" 4 @ 3 1/2" No. of ballast pumps 1 How driven ELECTRIC MOTOR Sizes of pumps 9" x 9" x 11" STROKE

Is the ballast pump fitted with a direct suction from the engine room bilges YES State size 5" Is a separate auxiliary pump suction fitted in Engine Room and size 5" ON BILGE MAIN Are all the bilge suction pipes fitted with roses AS PER RULES Are the valves in Engine Room always accessible YES

Are the sluices on Engine Room bulkheads always accessible Are all connections with the sea direct on the skin of the ship YES

Are they valves or cocks BOTH Are they fixed sufficiently high on the ship's side to be seen without lifting the floor plates YES

Are the discharge pipes above or below the deep water line BOTH Are they each fitted with a discharge valve always accessible on the plating of the vessel YES

Are all pipes, cocks, valves and pumps in connection with the machinery accessible at all times YES Are the bilge suction pipes, cocks and valves arranged so as to prevent any communication between the sea and the bilges YES Is the screw shaft tunnel watertight YES Is it fitted with a watertight door YES

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

No. of main air compressors 2 No. of stages 3 (65 kg/cm²) Diameters 600 x 540 x 148 mm Stroke 350 mm Driven by MAIN ENGINE

No. of auxiliary air compressors 1 No. of stages 2 (25 kg/cm²) Diameters 400 x 350 mm Stroke 260 mm Driven by ELECTRIC MOTOR

No. of small auxiliary air compressors 1 No. of stages 2 (65 kg/cm²) Diameters 106 x 34 mm Stroke 80 mm Driven by STEAM

No. of scavenging air pumps Diameter Stroke Driven by

Diameter of auxiliary Diesel Engine crank shafts as per Rule 167 mm as fitted 170 mm Are the air compressors and their coolers made so as to be easy of access YES

AIR RECEIVERS:—No. of high pressure air receivers 7 Internal diameter 295 mm Cubic capacity of each 5 @ 150 LITRES EACH 2 @ 88 "

material SOLID DRAWN STEEL Seamless, lap welded or riveted longitudinal joint SEAMLESS Range of tensile strength 28/32 TONS

thickness .56" working pressure by Rules 1325 lbs/sq. in. No. of starting air receivers 2 Internal diameter 6'-0 3/8"

Total cubic capacity 1076 Co. ft. Material STEEL Seamless, lap welded or riveted longitudinal joint T. R. D. B. S.

Range of tensile strength 27/32 TONS thickness SHELL 1 1/32" Working pressure by rules 360 lbs/sq. in. Is each receiver, which can be isolated, fitted with a safety valve as per Rule / ON COMMON PIPE Can the internal surfaces of the receivers be examined YES What means are provided for cleaning their inner surfaces LOOSE ENDS & MAN HOLE DOORS Is there a drain arrangement fitted at the lowest part of each receiver YES



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 & JACKETS	15/1/24 to 6/2/24	15 LBS/SQ	50 LBS/SQ	H.M.B.	
" " COVERS	30/1/24 to 19/2/24	"	"	H.M.B.	
" " JACKETS		"	"	H.M.B.	
" " PISTON WATER PASSAGES	8/1/24 to 18/1/24	"	"	H.M.B.	
MAIN COMPRESSORS—1st STAGE L.P.	30/1/24 & 8/2/24	71 LBS/SQ	150 LBS/SQ	H.M.B.	
2nd M.P.	31/1/24 & 7/2/24	220 LBS/SQ	500 LBS/SQ	H.M.B.	
3rd H.P.	8/1/24 & 9/1/24	1000 LBS/SQ	2000 LBS/SQ	H.M.B.	
AIR RECEIVERS—STARTING	18/1/24 BELFAST	356 LBS/SQ	585 LBS/SQ	W.B.	CEES N:3
" INJECTION	7/2/24 & 21/2/24	1000 LBS/SQ	2000 LBS/SQ	H.M.B.	AV. Nos 556, 7, 8, 9, 560, 1, 2
AIR PIPES STARTING	13/2/24 to 12/5/24	356 LBS/SQ	712 LBS/SQ	H.M.B.	
FUEL PIPES FILLING & SUCTIONS	2/5/24 & 3/5/24	"	30 LBS/SQ		
FUEL PUMPS					
SILENCER					
WATER JACKET					
SEPARATE FUEL TANKS	21/2/24	✓	10 LBS/SQ	H.M.B.	

PLANS. Are approved plans forwarded herewith for shafting? **YES**

Receivers Retained at Belfast Separate Tanks Retained at Glasgow

SPARE GEAR Supplied as per attached list.

The foregoing is a correct description,

For HARLAND & WOLFF, LTD.

F. C. Green

Manufacturer.

MANAGER BIRMINGHAM WORKS

Dates of Survey while building

During progress of work in shops - 1923 Oct 26 Nov 8 9 16 21 22 27 29 30 Dec 3 4 6 24 26 27 1924 Jan 8 9 11 14 15 17 18 24 25 30 31 Feb 1 4 6 7 8 12 13 14

During erection on board vessel - 19 21 22 27 Mar 3 4 5 10 11 18 21 26 28 31 Apr 3 8 9 25 May 2 3 8 12 20 21 22 29

Total No. of visits 60

Dates of Examination of principal parts—Cylinders 15/1/24 to 6/2/24 Covers 30/1/24 to 19/2/24 Pistons 8/1/24 to 18/1/24 Rods 18/1/24 Connecting rods 1/2/24

Crank shaft 14/1/24 Thrust shaft 18/2/24 Tunnel shafts 27/12/23 21/2/24 Screw shaft 21/2/24 Propeller 21/2/24 Stern tube 31/1/24 Engine seatings 10/5/24

Engines holding down bolts 28/4/24 Completion of pumping arrangements 22/5/24 Engines tried under working conditions 29/5/24

Completion of fitting sea connections 11/3/24 Stern tubes 27/2/24 & 10/3/24 Screw shaft and propeller 10/3/24

Material of crank shaft S. Identification Mark on Do. 14/2/24 & 24/2/23 Material of thrust shaft S. Identification Mark on Do. 3254 3283 2914 2093 S.P. P.M.C.G.

Material of tunnel shafts S. Identification Marks on Do. SEE UNDER Material of screw shafts S. Identification Marks on Do. 3282 3283 4640S 4640S 2098 6915 SPARE 3384 LLOYDS 6925 P.M.C.G. S.P.

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

Is this machinery duplicate of a previous case **No** If so, state name of vessel.

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

TUNNEL SHAFTS:-

PORT	3433 LLOYDS 2117 P.M.C.G.	3359 LLOYDS 2102 P.M.C.G.	3432 LLOYDS 2117 P.M.C.G.	3391 LLOYDS 6950 S.P.	3334 LLOYDS 6940 S.P.	3335 LLOYDS 6924 S.P.
Nº1	3594 LLOYDS 2152 P.M.C.G.	3360 LLOYDS 2162 P.M.C.G.	3350 LLOYDS 6949 S.P.	3390 LLOYDS 6941 S.P.	3392 LLOYDS 6925 S.P.	3393 LLOYDS 6911 P.M.C.G.

This machinery has been constructed under special survey in accordance with the rules and approved plans. The materials and workmanship are sound and good, it has been fitted on board the vessel in an efficient manner, tried under full power working conditions and everything found satisfactory and is in my opinion eligible to be classed with record of L.M.C 5-24.

The amount of Entry Fee ... £ 6 : 0

Special ... £ 103 : 7

Donkey Boiler Fee ... £ ✓ :

Travelling Expenses (if any) £ ✓ :

When applied for, 6. 6. 1924

When received, [Signature]

H.M. Cruick.
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 10 JUN 1924

Assigned + LMC 524

CERTIFICATE WRITTEN 5.8.24



GLASGOW

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