

## REPORT ON OIL ENGINE MACHINERY.

No 12784

Received at London Office NOV 9 1940

Date of writing Report 6<sup>th</sup> Nov 1940 When handed in at Local Office 6<sup>th</sup> Nov 1940

Port of BELFAST

No. in Survey held at BELFAST  
Reg. Book.Date, First Survey 4<sup>th</sup> Aug 1939 Last Survey 24<sup>th</sup> Oct. 1940

Number of Visits 150

Single  
on the Turn  
Triple  
Quadruple  
Screw vessel

"ARAYBANK"

Tons Gross 7258  
Net 5247

Built at BELFAST By whom built HARLAND & WOLFF, LD. Yard No. 1034 When built 1940-10  
Engines made at BELFAST By whom made HARLAND & WOLFF, LD. Engine No. 1034 When made 1940  
Donkey Boilers made at BELFAST By whom made HARLAND & WOLFF, LD. Boiler No. 1034 When made 1940  
Brake Horse Power 3200 Owners ANDREW WEIR & CO. LD. Port belonging to BELFAST  
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 OCEAN GOING CARGO

OIL ENGINES, &c.—Type of Engines H&W. AIRLESS INJECT. UNDER PISTON <sup>SUPERCHARGE</sup> 4 stroke cycle Single or double acting S.A.  
Maximum pressure in cylinders 700 LB/IN<sup>2</sup> Diameter of cylinders 740<sup>M</sup> Length of stroke 1500<sup>M</sup> No. of cylinders 6 No. of cranks 6  
Mean Indicated Pressure 128 LB/IN<sup>2</sup> Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 972<sup>M</sup> Is there a bearing between each crank YES  
Revolutions per minute 101 <sup>TURNING</sup> Wheel dia. 2489<sup>M</sup> Weight 2590 Kgs Means of ignition COMP Kind of fuel used HEAVY OIL  
Crank Shaft, <sup>Solid forged</sup> dia. of journals as per Rule As App. Crank pin dia. 505<sup>M</sup> Crank Webs Mid. length breadth 840<sup>M</sup> Thickness parallel to axis 310<sup>M</sup>  
<sup>Sum built</sup> All built as fitted 505<sup>M</sup> Mid. length thickness 310<sup>M</sup> Thickness around eye hole 222.5<sup>M</sup>  
<sup>TURNING</sup> Wheel Shaft, diameter as per Rule As App. Intermediate Shafts, diameter as per Rule As App. Thrust Shaft, diameter at collars as per Rule As App.  
as fitted 454<sup>M</sup> as fitted 137/8" as fitted 454<sup>M</sup>  
Tube Shaft, diameter as per Rule As App. Screw Shaft, diameter as fitted 15 1/2" Is the <sup>turn</sup> screw shaft fitted with a continuous liner YES  
as fitted <sup>as per Rule</sup> 13/16" Thickness between bushes as fitted 21/32" 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 ONE LENGTH  
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 YES Length of Bearing in Stern Bush next to and supporting propeller 5'5"  
Propeller, dia. 17'-6" Pitch 13'-0" No. of blades 4 Material MANG BRONZE whether Moveable SOLID Total Developed Surface 92 sq. feet  
Method of reversing Engines COMP. AIR Is a governor or other arrangement fitted to prevent racing of the engine when detached YES Means of lubrication  
FORCED Thickness of cylinder liners 53<sup>M</sup> 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 S.W. & 1 F.W. WITH STAND 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. NONE 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 BILGE @ 80 T.P.H., 1 BALLAST @ 200 T.P.H., 1 G.S.P. @ 140 T.P.H.  
How driven 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 YES  
Ballast Pumps, No. and size 1 @ 200 T.P.H. ALSO 1 G.S.P. @ 140 T.P.H. Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size 1 ENG. DRIV. @ 80 T.P.H.  
Are two independent means arranged for circulating water through the Oil Cooler YES Suctions, connected to Main Bilge Pumps and Auxiliary Bilge  
Pumps, No. and size:—In Machinery Spaces 2 @ 3 1/2", 2 @ 2 1/2" TUNNEL WELL - 1 @ 3 1/2" In Pump Room YES  
In Holds, &c. Nos. 1, 2 & 3 Holds - 1 @ 3" P.R.S. IN EACH. DEEP TKS. (4) - 1 @ 2 1/2" IN EACH. Nos. 4 & 5 Holds - 1 @ 3" P.R.S. IN EACH  
Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1 @ 5" P., 1 @ 5" S.  
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 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 NONE How are they protected YES  
What pipes pass through the deep tanks NONE 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 DECK  
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<sup>M</sup> x 245<sup>M</sup> Stroke 130 Driven by STEAM  
Auxiliary Air Compressors, No. 1 No. of stages 1 Diameters 100<sup>M</sup> Stroke 100 Driven by STEAM  
Small Auxiliary Air Compressors, No. 1 No. of stages 1 Diameters 100<sup>M</sup> Stroke 100 Driven by STEAM  
What provision is made for first Charging the Air Receivers COMPRESSORS ARE STEAM DRIVEN  
Scavenging Air Pumps, No. 1 Diameter 100<sup>M</sup> Stroke 100 Driven by STEAM  
Auxiliary Engines crank shafts, diameter as per Rule No OIL ENGINE AUXILIARIES No. 2 STEAM DRIVEN AUXILIARY  
as fitted Position DYNAMO SETS ON STARBOARD SIDE  
Have the Auxiliary Engines been constructed under special survey No Is a report sent herewith YES

00652-006522-0059



4B 12784

AIR RECEIVERS: — Have they been made under survey

YES

State No. of Report or Certificate 199

Is each receiver, which can be isolated, fitted with a safety ~~disc~~ 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

by Rules  
Actual

Starting Air Receivers, No. 2

Total cubic capacity

2 x 450 C.F.T.

Internal diameter

6'-0 5/16"

thickness

1"

Seamless, lap welded or riveted longitudinal joint

RIVETED

Material

S.M. STEEL

Range of tensile strength

28-32 T/0"

Working pressure

by Rules  
Actual

364 LB/0"  
356 LB/0"

IS A DONKEY BOILER FITTED?

YES - 2

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

(If not, state date of approval)

24/5/39

Receivers 14/8/39

Separate Fuel Tanks 20/2/40

Donkey Boilers 26/7/39, 20/11/39

General Pumping Arrangements

26/9/39

Pumping Arrangements in Machinery Space

28/11/39

Oil Fuel Burning Arrangements

26/1/40

SPARE GEAR.

Has the spare gear required by the Rules been supplied

YES

State the principal additional spare gear supplied

SEE ATTACHED LIST

HARLAND AND WOLFF, LIMITED  
The foregoing is a correct description.

A. J. Marshall

Manufacturer.

1939  
During progress of work in shops - Aug 4, 7, 8, 31 Sept 4 Oct 12, 23 Nov. 1, 4, 8, 10, 13, 20 Dec 1, 5, 15 Jan 1, 2, 9, 10, 11, 13, 15, 16, 22, 24, 26, 29 Feb. 2, 3, 5, 6, 7, 8, 9, 10, 21, 28 Mar 1, 4, 11, 13, 19, 22 Apr 1, 3, 4, 6, 9, 10, 12, 15, 17, 18, 20, 23, 25, 27, 29, 30 May 2, 3, 6, 7, 8, 9, 10, 11, 13, 14, 15, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 June 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 15, 17, 18, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31 July 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 Aug 1, 2, 5, 6, 8, 9, 12, 16, 19, 21, 22, 23, 27, 30 Sept 3, 4, 6, 9, 10, 11, 13, 16, 21, 23, 26, 27, 30 Oct 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 Nov 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 Dec 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31  
Total No. of visits 7-8-11-12-14-16-17-18-21-23-24 = 150

Dates of Examination of principal parts - Cylinders 20-27/5/40 Covers 29-4-40 Pistons 21-24/5/40 Rods 6/6/40 Connecting rods 13-5-40

Crank shaft 25-4-40 Flywheel shaft Thrust shaft 6-5-40 Intermediate shafts 5/12/39-22/7/40 Tube shaft

Screw shaft 11-4-40 Propeller 28-2-40 Stern tube 31-5-40 Engine seatings 31-5-40 Engines holding down bolts 10-9-40

Completion of fitting sea connections 5-6-40 Completion of pumping arrangements 21-10-40 Engines tried under working conditions 24-10-40

Crank shaft, Material S.M. STEEL Identification Mark LLOYDS 299 Flywheel shaft, Material Identification Mark

Thrust shaft, Material Identification Mark LLOYDS 299 Intermediate shafts, Material S.M. STEEL Identification Marks LLOYDS 337

Tube shaft, Material Identification Mark Screw shaft, Material S.M. STEEL Identification Mark LLOYDS 337

Identification Marks on Air Receivers BOTH MARKED No. 199

LLOYD'S TEST

585 LB/0"

W.P. 356 LB/0"

G.J.T. 30-5-40

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 7-PORTABLE 2 GALLON FOAM TYPE AS APPROVED

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

No

If so, state name of vessel

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

This machinery has been constructed under Special Survey in accordance with the Rules and to approved plans. The materials and workmanship are good. The machinery has been efficiently installed on board the vessel and tried out at sea under full working conditions with satisfactory results. In our opinion the machinery of the vessel is eligible to receive the notation of + L.M.C. 10, 40, Oil Engines, C.L., 2 D.B. - 120 LB/0"

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

Special ... £ 98 : 10 : 6. 11. 19. 40.

Donkey Boiler Fee ... £ 10 : 12 : When received,

WASTE HEAT BOILER ... £ 7 : 13 : 2. 12. 19. 40.

Travelling Expenses (if any) ... £ 8 : 8 :

AIR RECEIVERS ... £ 8 : 8 :

Committee's Minute

Assigned + L.M.C. 10, 40 oil oil

2 D.B. - 120 LB

J. McFee  
Engineer Surveyor to Lloyd's Register of Shipping.



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