

REPORT ON OIL ENGINE MACHINERY.

No. 28810

TUE. MAY. 20 1924

Date of writing Report

19

When handed in at Local Office

19 MAY 1924

Port of SUNDERLAND.

Received at London Office

No. in Survey held at

SUNDERLAND

Date, First Survey

26th Feb 23

Last Survey

15th May 1924

Reg. Book.

Number of Visits

67

on the ^{Single} ~~Turn~~ _{Triple} Screw vessels

"PACIFIC TRADER"

Tons

Gross 6304
Net 3849

Master

Built at

Sunderland

By whom built

Messrs W. D. Duffell & Sons

Yard No.

578

When built

1924

Engines made at

Sunderland

By whom made

Messrs W. D. Duffell & Sons

Engine No.

578

When made

1924

Donkey Boilers made at

Newcastle & Annan

By whom made

Messrs Hawthorn Leslie & Co. Ltd. Cockeray

Boiler No.

4208

When made

1924

Brake Horse Power

2900

Owners

Furness Withy & Co. Ltd

Port belonging to

London

Nom. Horse Power as per Rule

498

Is Refrigerating Machinery fitted for cargo purposes

YES

Is Electric Light fitted

YES

OIL ENGINES, &c.

Type of Engines

Duffell opposed piston solid fuel 2 or 4 stroke cycle 2

Single or double acting

single

Maximum pressure in cylinders

40 atm. (580 lb)

No. of cylinders

4

No. of cranks

4 three throw

Diameter of cylinders

580 mm

Length of stroke

2 + 1160 mm

Revolutions per minute

87

Means of ignition

Temp of compression

Kind of fuel used

Crude oil

Is there a bearing between each crank

YES

Span of bearings (Page 92, Section 2, par. 7 of Rules)

1050 mm

Distance between centres of

Side Con. rods

1330 mm

Is a flywheel fitted

YES

Diameter of crank shaft journals

as per Rule

400 mm

as fitted

430 mm

Diameter of crank pins

460 mm

Breadth of crank webs

as per Rule

Strunk

as fitted

650

Thickness of ditto

as per Rule

Strunk

as fitted

260 mm

Diameter of flywheel shaft

as per Rule

400 mm

as fitted

430 mm

Diameter of tunnel shaft

as per Rule

370 mm

as fitted

382 mm

Diameter of thrust shaft

as per Rule

400 mm

as fitted

430

Diameter of screw shaft

as per Rule

400 mm

as fitted

400

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

None

Length of stern bush

5'-10"

Diameter of propeller

17'-0"

Pitch of propeller

15'-0"

No. of blades

4

state whether moveable

No

Total surface

91

square feet

Method of reversing

Comp. air

Is a governor or other arrangement fitted to prevent racing of the engine when disengaged

YES

Thickness of cylinder liners

1" Rinfres

Are the cylinders fitted with safety valves

YES

Means of lubrication

Fresh lubrication

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

Funnel

No. of cooling water pumps

2

Is the sea suction provided with an efficient strainer which can be cleared within the vessel

no sea water thro. gasket

No. of bilge pumps fitted to the main engines

None

Diameter of ditto

Stroke

Can one be overhauled while the other is at work

YES

No. of auxiliary pumps connected to the main bilge lines

3

How driven

Steam direct acting

Sizes of pumps

40 tons per hour each

No. and sizes of suction connected to both main bilge pumps and auxiliary bilge pumps:—In engine room

20 3/4"

and in holds, etc.

Funnel with 10 3/4" Duplex 2 each 25"

No. of ballast pumps

1

How driven

Steam direct act

Sizes of pumps

300 tons per hr

Is the ballast pump fitted with a direct suction from the engine room bilges

YES

State size

9"

Is a separate auxiliary pump suction fitted in

MUD BONES & STRAIGHT TAIL PIPES

Engine Room and size

YES 3 1/2"

Are all the bilge suction pipes fitted with roses

YES in hold

Are the roses in Engine Room always accessible

YES

Are the sluices on Engine Room bulkheads always accessible

None

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

Above

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

Upper Platform

No. of main air compressors

None

No. of stages

—

Diameters

Stroke

Driven by

No. of auxiliary air compressors

2

No. of stages

3

Diameters

Stroke

1 1/2 + 9 7/8 x 3 1/2

Stroke

7"

Driven by

Steam 13 1/2 + 7" stroke

No. of small auxiliary air compressors

—

No. of stages

—

Diameters

Stroke

Driven by

No. of scavenging air pumps

1

Diameter

62"

Stroke

41"

Driven by

Main Engine

Diameter of auxiliary Diesel Engine crank shafts

as per Rule

as fitted

Are the air compressors and their coolers made so as to be easy of access

YES

AIR RECEIVERS:

No. of high pressure air receivers

None

Internal diameter

Cubic capacity of each

material

Seamless, lap welded or riveted longitudinal joint

Range of tensile strength

thickness

working pressure by Rules

No. of starting air receivers

2

Internal diameter

3'-6"

Total cubic capacity

220 cub. ft

Material

Steel

Seamless, lap welded or riveted longitudinal joint

Non-joint

Range of tensile strength

18-32 tons

thickness

1 1/4"

Working pressure by rules

610

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

YES

What means are provided for cleaning their inner surfaces

YES

inner surfaces

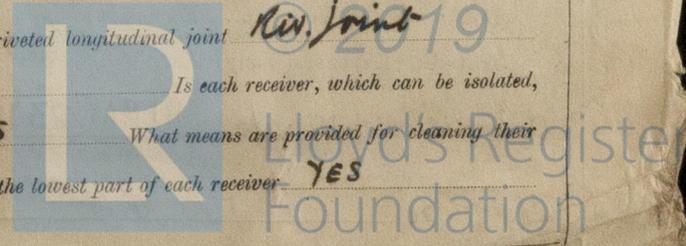
Man hole 16x12"

Is there a drain arrangement fitted at the lowest part of each receiver

YES

IF THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

W234-0045



IS A DONKEY BOILER FITTED? *Yes*

If so, is a report now forwarded? *Yes: 8/11/24 & Nov. 7/25*

HYDRAULIC TESTS:—

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS	<i>Plain cylindrical form, soundness ascertained by inspection</i>				
" " COVERS	<i>None</i>				
" " JACKETS	<i>2.10.23 to 26.10.23.</i>	<i>4 lbs</i>	<i>30 lbs</i>	<i>No 578 110405 TEST 30 lbs G.A.H.</i>	
" PISTON WATER PASSAGES	<i>12.9.23</i>	<i>30 lbs</i>	<i>100 lbs</i>	<i>No 578 110405 TEST 100 lbs G.A.H.</i>	
MAIN COMPRESSORS—1st STAGE	<i>None</i>				
" 2nd "	<i>✓</i>				
" 3rd "	<i>✓</i>				
AIR RECEIVERS—STARTING	<i>21.1.24</i>	<i>600 lbs</i>	<i>800 lbs</i>	<i>No 578 110405 TEST 600 lbs G.A.H.</i>	
" INJECTION	<i>✓</i>				
AIR PIPES	<i>4.12.23 to 24.4.24</i>	<i>600 lbs</i>	<i>1000 lbs</i>	<i>No 578 110405 TEST 1000 lbs G.A.H.</i>	
FUEL PIPES	<i>28.9.23 to 4.12.23</i>	<i>8000 lbs</i>	<i>12000 lbs</i>	<i>No 578 110405 TEST 12000 lbs G.A.H.</i>	
FUEL PUMPS	<i>7.5.24</i>	<i>8000 lbs</i>	<i>12000 lbs</i>	<i>No 578 110405 TEST 12000 lbs G.A.H.</i>	
SILENCER	<i>Lagged with asbestos composition & open to atmosphere</i>				
" WATER JACKET	<i>None</i>				
SEPARATE FUEL TANKS	<i>8.3.24 to 15.3.24</i>	<i>nil</i>	<i>10 lbs</i>	<i>No 578 110405 TEST 10 lbs G.A.H.</i>	

PLANS. Are approved plans forwarded herewith for shafting *YES* Receivers *SAME AS 577* Separate Tanks *YES*

SPARE GEAR *1 cyl. liner, 1 main piston, 12 piston rings, 2 center cone rods top end bearings complete, 1 water bottom and bearing complete, 1 side cross hd with shoes complete, 1 main bearing with bolts complete, 1 2nd length crank shaft, 1 set crank coupling bolts, 1 set tunnel shaft comp. bolts, 1 set special wheels for cam shaft drive, 4 fuel valves & liners, 1 starting valve, 1 relief valve, 1 scavenge pump drive valve & extra discs, 1 scavenge pump suction valve & disc, 1 fuel pump body & rams & guides, 1 spare propeller shaft, 1 propeller, 1 set bearing valves & pist. rings for air compressors, 1 set spares for oil burning unit, 1 set bilge pump valves, 1 set transfer pump valves, 1 set of bolts & nuts & cover.*

The **WILLIAM DOXFORD & SONS, Limited,** *Manchester*

A. Maxwell Secretary. *Manufacturer.*

Dates of Survey while building: During progress of work in shops— *1923. Feb. 26. Mar. 14. 19. Apr. 4. 10. 12. 13. 16. 25. May 2. 8. 16. 18. 23. 31. June 12. 25. July 11. 13. 19. 27. Aug 8. 17. 22. Sep. 3. 12. 28. Oct. 2. 4. 8. 15. 23. 26. Nov. 5. 15. 19. 26. Dec. 4. 6. 22. 27. Jan. 21. Feb. 20. 1924*
 During erection on board vessel— *6. 17. 19. 25. 28. Apr. 7. 21. 28. 30. May 1. 5. 7. 14. 15.*
 Total No. of visits *57.*

Dates of Examination of principal parts—Cylinders *21.11.23* Covers *✓* Pistons *26.10.23* Rods *15.11.23* Connecting rods *15.11.23*
 Crank shaft *6.9.23* Thrust shaft *15.11.23* Tunnel shafts *15.11.23* Screw shaft *15.11.23* Propeller *15.11.23* Stern tube *15.11.23* Engine seatings *28.3.24*
 Engines holding down bolts *28.3.24* Completion of pumping arrangements *28.4.24* Engines tried under working conditions *15.5.24*
 Completion of fitting sea connections *28.2.24* Stern tube *28.2.24* Screw shaft and propeller *28.3.24 (4299)*
 Material of crank shaft *Steel* Identification Mark on Do. *578 AL* Material of thrust shaft *Steel* Identification Mark on Do. *578 G.A.H.*
 Material of tunnel shafts *Steel* Identification Marks on Do. *578 G.A.H.* Material of screw shafts *Steel* Identification Marks on Do. *578 G.A.H.*
 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 *PACIFIC SHIPPER ✓*

General Remarks (State quality of workmanship; opinions as to class, &c.) *The machinery of this vessel has been built under special survey the materials & workmanship are sound and good. The main and aux. machinery has been fitted and fixed on board in a satisfactory manner and have been tried under working conditions with satisfactory results. The machinery under the vessel eligible in my opinion to have used of + L.M.C. 5. 24 Oil Engine.*

The propeller and fittings were examined in dry dock at Messrs Smiths & Co. St. Helens on May 15th and found satisfactory.

The amount of Entry Fee ... £ *5* :
 Special ... £ *99.14* :
 Donkey Boiler Fee ... £ :
 Travelling Expenses (if any) £ :
 When applied for, *14 MAY 1924*
 When received, *21 MAY 1924*

L. A. H. H. H.
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI. MAY. 23 1924*
 Assigned *+ L.M.C. 5. 24 Oil engine C.L.*



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