

REPORT ON OIL ENGINE MACHINERY.

Ref 9352
No. 29017

Date of writing Report

19

When handed in at Local Office

24 FEB 1925

Port of

Received at London Office

SUNDERLAND

25 FEB 1925

No. in Survey held at
Reg. Book.

SUNDERLAND

Date, First Survey 30 June 24 Last Survey 19 Feb 1925

Number of Visits 43

on the ~~Single~~ ^{MOTOR} ~~Twin~~ ^{Screw} vessel "PORT DUNEDIN"Tons { Gross 4463
Net 4453Master ~~Hutchinson~~ Built at ~~Belfast~~ By whom built ~~W. Doxford & Co~~ Yard No. 477 When built 1925Engines made at ~~Sunderland~~ By whom made ~~W. Doxford & Co~~ Engine No. 151 When made 1925Donkey Boilers made at ~~Armagh~~ By whom made ~~Cochran & Co~~ Boiler No. 9874 When made 1925Brake Horse Power 4840 Owners ~~Commonwealth & Dominion Line Ltd~~ Port belonging to ~~London~~Nom. Horse Power as per Rule 1112 Is Refrigerating Machinery fitted for cargo purposes ~~yes~~ Is Electric Light fitted ~~yes~~

OIL ENGINES, &c.—Type of Engines ~~Twin screw~~ ^{2 or 4 stroke cycle} ~~2~~ ^{Single or double acting} ~~single~~

Maximum pressure in cylinders 40 atm. 568 lb No. of cylinders 4 each engine No. of cranks 4 thru throw Diameter of cylinders 540 mm

Length of stroke 2 x 1080 mm Revolutions per minute 95 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) 980 mm

Distance between centres of ~~main bearings~~ 1240 mm Is a flywheel fitted YES Diameter of crank shaft journals as per Rule 373 mm as fitted 400 mm

Diameter of crank pins 430 mm Breadth of crank webs as per Rule ~~shrunk~~ as fitted 610 mm appd. Thickness of ditto as per Rule ~~shrunk~~ as fitted 245 mm appd.

Diameter of flywheel shaft as per Rule 373 mm as fitted 400 mm Diameter of tunnel shaft as per Rule 13.39" as fitted 13.8" Diameter of thrust shaft as per Rule 373 mm as fitted 400 mm

Diameter of screw shaft as per Rule 14.4" as fitted 15.4" 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 ~~hose~~ (Leopold) Length of stern bush 5'-1" Diameter of propeller 16'-0"

Pitch of propeller 15'-9" No. of blades 4 state whether moveable ~~yes~~ Total surface 80 (one propeller) square feet

Method of reversing ~~Compressed air~~ Is a governor or other arrangement fitted to prevent racing of the engine ~~when decelerated~~ Thickness of cylinder liners 1/8" ~~Rimfire~~

Are the cylinders fitted with safety valves YES Means of lubrication ~~Forced~~ 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 sea water thro. ~~Jackets~~ No. of cooling water pumps ~~Two~~ Is the sea suction provided with an efficient strainer which can be cleared within the vessel ~~Jackets~~ 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 ~~Two~~ How driven ~~Electric motors~~

Sizes of pumps ~~Bilge 8" x 8" duplex~~ Ballast 12" x 12" duplex No. and sizes of suction connected to both main bilge pumps and auxiliary bilge pumps:—In engine room 3 @ 3" and in holds, etc. 101, 2 @ 3", 102, 2 @ 3", 103, 2 @ 3", 104, 2 @ 3", 105, 1 @ 3" No. of ballast pumps ~~One~~ How driven ~~Electric motor~~ Sizes of pumps 12" x 12" duplex

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 Engine Room and size ~~yes~~ 6" Are all the bilge suction pipes fitted with roses ~~yes~~ Are the roses in Engine Room always accessible ~~yes~~

Are the sluices on Engine Room bulkheads always accessible ~~yes~~ 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 ~~Main 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~~

No. of main air compressors ~~NONE~~ No. of stages ~~—~~ Diameters ~~—~~ Stroke ~~—~~ Driven by ~~—~~

No. of auxiliary air compressors ~~Two~~ No. of stages ~~3~~ Diameters ~~150 cubic feet free air per minute~~ Stroke ~~5~~ Driven by ~~Electric motors~~

No. of small auxiliary air compressors ~~one~~ No. of stages ~~3~~ Diameters ~~20 cubic feet free air per minute~~ Stroke ~~5~~ Driven by ~~Steam~~

No. of scavenging air pumps ~~one each engine, double acting~~ Diameter 1460 mm Stroke 970 mm Driven by ~~Main crank shaft~~

Diameter of auxiliary Diesel Engine crank shafts as per Rule ~~see separate report~~ Are the air compressors and their coolers made so as to be easy of access ~~yes~~

IR 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 ~~Three~~ Internal diameter ~~4'-11"~~

Total cubic capacity ~~450 cubic feet~~ Material ~~Steel~~ Seamless, lap welded or riveted longitudinal joint ~~riveted longitudinal joint~~

Range of tensile strength ~~98 & 32 tons~~ thickness ~~1 1/2"~~ Working pressure by rules ~~616 lbs~~ 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 ~~16 x 18 manhole~~ 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	Soundness ascertained by inspection. Plain cylindrical form				
" " COVERS	none				
" " JACKETS	15.8.24 to 24.11.24	4 lbs	30 lbs	151 LLOYD TEST 30 lbs G.A.H. (C.A.B.)	
" " PISTON WATER PASSAGES	24.11.24 to 22.12.24	30 lbs	100 lbs	151 LLOYD TEST 100 lbs G.A.H.	
MAIN COMPRESSORS—1st STAGE	NONE				
" 2nd "	✓				
" 3rd "	✓				
AIR RECEIVERS—STARTING	2-3-25	600 lbs	800 lbs	No 18 LLOYD TEST 800 LBS WP 600 LBS W.B. 2-3-25	
" INJECTION	none for main engine				
AIR PIPES	6.1.25 to 4.2.25	600 lbs	1000 lbs	151 LLOYD TEST 1000 lbs G.A.H.	
FUEL PIPES	22.12.24 to 26.1.25	8000 lbs	12000 lbs	151 LLOYD TEST 12000 lbs G.A.H.	
FUEL PUMPS	20.1.25	8000 lbs	12000 lbs	151 LLOYD TEST 12000 lbs G.A.H.	
SILENCER	Lagged with asbestos composition and open to atmosphere				
" WATER JACKET	NONE				
SEPARATE FUEL TANKS	16.7.25 to 9.6.25	10 lbs & 5 lbs	20 lbs & 10 lbs	W.B.	Ballast at 12 ft Engine seating.

PLANS. Are approved plans forwarded herewith for shafting

Retained for dup. eng. receivers Yes (1 of) Separate Tanks Yes (2 of)

SPARE GEAR 2 cylinder liners complete with pistons, 1 upper & 1 lower piston complete with skirt & rod. 44 piston rings 2 centre connecting top and brass & bolts, 1 centre con. rod bottom end bearing & bolts 2 side con. 2 bottom end bearings & bolts, 1 side cross head complete & bolts & nuts, 1 main bearing complete with studs & nuts 1 set coupling bolts for crank shaft, 8 fuel valves complete, 1 starting valve complete, 1 relief valve 2 scavenging pump delivery valves with extra discs, 2 scavenging pump suction valves, 4 spur wheels cam shaft drive 2 loose wheels cam shaft drive, 4 scavenging pump pist. rings, 1 fuel pump body complete, 1 set thrust pad assisted bolts & nuts 2000 various sizes. 1 set coupling bolts, 1 set of valves for each pump including Ballast pumps, 1 auxiliary fuel pump for main engine, spare for fuel delivery & air starting. 1 pocket and 1 fuel pump at 15 lbs. 1 set valves for 1 auxiliary air compressors. 1 set for motor. 1 set for 1 set shaft & 2 propellers

The foregoing is a correct description,

19/2/25

Manufacturer.

Dates of Survey while building
During progress of work in shops - 1924. June 20. July 3. 15. 18. 23. 28. Aug. 12. 15. 18. Sep. 8. 11. 15. 19. 20. 30. Oct. 1. 3. 8. 13. 17. 20. 23. 30. Nov. 7. 12. 20. 24. 29. Dec. 1. 3. 12. 16. 30. 31. Jan. 6. 7. 1. 2. 22. 27. Feb. 3. 5. 10. 13. 16. 18. 23. 24. Mar. 2. 5. 9. 10. 17. 23. 26. 30. 31. Apr. 6. 9. 20. 27. 30. May 1. 5. 7. 8. 13. 15. 18. 20. 21. 23. 24. 26. 27. 30

Dates of Examination of principal parts—Cylinders 15.8.24.11.24 Covers none Pistons 24.11.24 Rods 24.11.24 Connecting rods 20.1.25 Crank shaft 6.5.24.9.24 Thrust shaft 1.12.24 Tunnel shafts 22.1.25 Screw shafts 22.1.25 Propeller 3.1.25 Stern tube 5.2.25 Engine seatings 10.3.25 Engines holding down bolts 13.5.25 Completion of pumping arrangements 13.5.25 Engines tried under working conditions 24.5.25 Completion of fitting sea connections 10.3.25 Stern tube 5.2.25 Screw shaft and propeller 10.3.25 Material of crank shafts Steel Identification Mark on Do. 4583 M.R. Material of thrust shafts Steel Identification Mark on Do. 151 G.A. Nos. 5509, 5556, 5504, 5559, 5591 all stamped with number 5551, 5553, 5647, 5506, 5544, 5508, LLOYD 22-1-25 W.B. Identification Marks on Do. 5554, 5555 Material of screw shafts Steel Identification Marks on Do. 22-1-25 W.B.

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, etc.) The machinery of this vessel has been built under special survey. The materials and workmanship are sound and good and are fitted on board the vessel will render her eligible in my opinion to have the benefit of 1-L.M.C. (with date) oil engine

The machinery has been forwarded to Belfast for installation in vessel.
The main & auxiliary machinery is efficiently installed & fixed in the vessel, has been tried under working conditions & manoeuvred as required by the Rules and is in good & safe working condition & eligible in my opinion to be classed & have records.
* LMC 5-25. T.S.C.L. Elect St. Refrig Machy. Fitted for oil fuel. 5-25 F.P. above 150° F.

The amount of Entry Fee ... £ 6 :
Special (4/5 fee) £ 102 : 5 :
Balance to be charged at Belfast 25 11 :
Travelling Expenses (if any) £ 44 : 5 : 0 :
3 air receivers
Committee's Minute
Assigned
+ Lmb 5.25 CL
Oil Engines 2 B - 100 lbs
When applied for, 24 FEB 1925
When received, 17 MAR 1925
G.A. Hall & William Butler
Engineer Surveyor to Lloyd's Register of Shipping.
Lloyd's Register Foundation