

## REPORT ON OIL ENGINE MACHINERY.

No. 44285

14 JAN 1925

Date of writing Report 5 Jan 1925 When handed in at Local Office 7 Jan 1925 Port of Glasgow  
 No. in Survey held at Glasgow Date, First Survey 13.12.1924 Last Survey 29.12.1924  
 Reg. Book. Number of Visits 449  
 on the Tug Single Screw vessel  
 Quadruple Triple HORANGI  
 Master Built at Glasgow By whom built The Fairfield S.S. & E.C. Co. Yard No. 603 When built 1924  
 Engines made at Glasgow By whom made The Fairfield S.S. & E.C. Co. Engine No. 603 When made 1924  
 Boilers made at Glasgow By whom made The Fairfield S.S. & E.C. Co. Boilers No. 603 When made 1924  
 Brake Horse Power 12000 Owners Union S.S. & E.C. of New Zealand Ltd. Port belonging to London  
 Nom. Horse Power as per Rule 3177 Is Refrigerating Machinery fitted for cargo purposes *yes* Is Electric Light fitted *yes*

L. ENGINES, &c. Type of Engines Fairfield Sulzer 2 or 4 stroke cycle 2 Single or double acting Single  
 Maximum pressure in cylinders 600 lb No. of cylinders 6 Total 24 No. of cranks 6 Diameter of cylinders 27 1/2  
 Length of stroke 39 Revolutions per minute 125 Means of ignition Compression Kind of fuel used Diesel fuel oil

Is there a bearing between each crank *yes* Span of bearings (Page 92, Section 2, par. 7 of Rules) 40  
 Distance between centres of main bearings 56 Is a flywheel fitted *yes* Diameter of crank shaft journals as per Rule 10.10.12 as fitted 19

Diameter of crank pins 19 Breadth of crank webs as per Rule 10.10.12 as fitted 3 Thickness of ditto as per Rule 10.10.12 as fitted 12

Diameter of flywheel shaft as per Rule 10.10.12 as fitted 16 Diameter of tunnel shaft as per Rule 10.10.12 as fitted 1 3/8 Diameter of thrust shaft as per Rule 7.11.12 as fitted 1 1/2

Diameter of screw shaft as per Rule 10.10.12 as fitted 18 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 *no*

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 *no*  
 If two liners are fitted, is the shaft lagged 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 *horn* Length of stern bush *For 36 aft 66* Diameter of propeller 13-0  
 Pitch of propeller 16-0 No. of blades 4 state whether moveable *no* Total surface 65.5 square feet

Method of reversing Changing Cam a governor or other arrangement fitted to prevent racing of the engine *yes* Thickness of cylinder liners 1  
 Are the cylinders fitted with safety valves *yes* Means of lubrication *Mechanical* 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 scater from being syphoned back to the engine *Exhaust*  
 Is the sea suction provided with an efficient strainer which can be cleared *yes*

No. of cooling water pumps 4 Is the sea suction provided with an efficient strainer which can be cleared *yes*  
 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 5 How driven 3 Steam 2 Electric  
 No. and sizes of suction connected to main bilge pumps and auxiliary bilge pumps: In engine room 6-3/4, 3-3/4, 3-3/4  
 and in holds, etc. 1.2 (only) 3-4 Holders 2-3 No. of ballast pumps 3 How driven 3 Steam 2 Electric  
 Is the ballast pump fitted with a direct suction from the engine room bilges *yes* State size 2-8 Is a separate auxiliary pump suction fitted in *yes*

Engine Room and size 1-10, 1-8, 1-7, 1-6 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 *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 *below* 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 Bridge 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 compressor 2 Each Engine No. of stages 3 Diameter 23 7/8, 21 1/4, 5 1/8 Stroke 20 Driven by Main engine  
 No. of auxiliary air compressors 4 No. of stages 3 Diameter *See Winch Report* Driven by *at a hand*

No. of small auxiliary air compressors 2 No. of stages 3 Diameter 12 1/2, 10 1/2, 3 Stroke 6 1/2 Driven by Electric motor  
 1 Emergency air compressor 3 Turbine driven Diameter *—* Stroke *—* Driven by Electric motor

No. of scavenging air pumps 3 Turbine driven Diameter *—* Stroke *—* Driven by Electric motor  
 Diameter of auxiliary Diesel Engine crank shafts as per Rule *See aton Report* Are the air compressors and their coolers made so as to be easy of access *yes*

AIR RECEIVERS:—No. of high pressure air receivers 4 Internal diameter 11 7/8 Cubic capacity of each 5.5 ft.  
 Material S. 7. Steel Seamless, lap welded or riveted longitudinal joint Solid drum Range of tensile strength 28/32 T.  
 Thickness 9/16 Working pressure by Rules 1220 lb No. of starting air receivers 10 Internal diameter 20

Total cubic capacity 280 ft. Material S. 7. Steel Seamless, lap welded or riveted longitudinal joint Solid drum  
 Range of tensile strength 28/32 T. thickness 1 Working pressure by rules 1615 lb 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 *Access by opening in end*  
 Is there a drain arrangement fitted at the lowest part of each receiver *yes*



IS A DONKEY BOILER FITTED? *Two Ann. Boilers* If so, is a report now forwarded? *yes.*  
HYDRAULIC TESTS:—

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS .....	2.7.23 - 19.10.23	600	1070	J.S.C.	
" " COVERS .....	2.7.23 - 19.10.23	600	1070	J.S.C.	
" " JACKETS .....	17.9.23 - 28.1.24	-	45	J.D. J.S.C.	
" " PISTON WATER PASSAGES .....	22.11.23 - 7.5.24	-	70	-	
MAIN COMPRESSORS—1st STAGE .....	24.10.23 - 28.1.24	45	500	J.S.C.	
" " 2nd .....	24.10.23 - 28.1.24	145	500	J.S.C.	
" " 3rd .....	28.9.23 - 20.11.23	1000	2000	J.S.C.	
AIR RECEIVERS—STARTING .....	Int. 5.7.23. Sta. 9.7.23	350	550	J.S.C.	
" " INJECTION .....	24.7.23.	1000	2000	J.P.	
AIR PIPES .....	29.10.23 - 23.5.24	350.1000	700.2000	J.S.C.	
FUEL PIPES .....	-	-	-	-	
FUEL PUMPS .....	21.8.23 - 16.10.23	1000	2000	H.C. J.S.C.	
SILENCER .....	-	-	-	-	
" " WATER JACKET .....	-	-	-	-	
SEPARATE FUEL TANKS .....	6.11.23	-	15.	J.S.C.	

PLANS: Are approved plans forwarded herewith for shafting *No. 10.10 & 7.11.22* Receivers *Gas* Separate Tanks *Gas*  
(If not, state date of approval)

SPARE GEAR 3. Cyl covers, 6 Fuel valve casings, 1 Air timing valve do, 24 Fuel needle valves, 4 Pistons & 170  
4. Cyl liners, 1 Set main skew wheels, 4 Top end bolts, 2 Bottom end bolts, 6 Yarn drawing belt, 2 Set of  
Large shaft coupling bolts, 1 Set of rings for each main & aux. Compressor piston, 2 Set of valves for 1 main & 1  
24 Plungers, 24 Liners, 4 Set of valves & driving links for Fuel pumps, 1 Steam chest, 1 Bucket and, 1 set of  
for daily fuel supply pump, 2 Set of valves for 1 large pump, 2 Set of valves & 1 bucket & rod for lubrication  
pump, 1 Set. Cyl. cover studs & nuts, 6 down the side of Fuel Oil & black air & 4 with Direct action air  
with flange & 1 Impeller & spindle for Jacket Circul. pump, 2. Propeller shaft, 2 propellers, Assorted bolts  
The foregoing is a correct description, & quantity of other parts.

For THE FAIRFIELD SHIPBUILDING AND  
ENGINEERING CO. LIMITED.

Manufacturer.

Phob. Trull			
1922 Dec 13, 21 1923 Jan 8, 15, 17, 19, 23, 26, 31 Feb 5, 6, 13, 20, 27, 28 Mar 6, 8, 15, 20, 26 Apr 3, 10, 11, 16, 17, 24, 25, 27			
Dates of Survey while building	During progress of work in shops--	2, 10, 14, 23, 26, 29, 31	Jan 4, 5, 6, 8, 11, 12, 13, 15, 19, 22, 26, 29, 30 Jul 2, 5, 6, 9, 10, 11, 34, 27, 30 Aug 1, 2, 6, 7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31
	During erection on board vessel--	5, 7, 10, 12, 14, 17, 19	20, 21, 25, 26, 27 Oct 1, 2, 3, 4, 5, 9, 10, 11, 12, 15, 16, 17, 18, 19, 23, 24, 25, 26, 27, 28, 29, 30 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
	Total No. of visits	2, 10, 14, 23, 26, 29, 31	20, 21, 25, 26, 27 Oct 1, 2, 3, 4, 5, 9, 10, 11, 12, 15, 16, 17, 18, 19, 23, 24, 25, 26, 27, 28, 29, 30 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

Dates of Examination of principal parts—Cylinders	249 29.6.23/	3-7-23/ 19.10.23	Covers	2-7-23/ 19.10.23	Pistons	27.9.23/ 19.10.23	Rods	26/9/23/ 6.12.23	Connecting rods	13.6.23/ 12.10.23/			
Crank shafts	7.7.23	Thrust shafts	27.9.23	Tunnel shafts	20.8.24	Screw shafts	24.4.24	Propellers	24.4.24	Stern tubes	7.12.23	Engine seatings	24.4.24
Engines holding down bolts	25.7.24	Completion of pumping arrangements	25.12.24	Engines tried under working conditions	8.11.24	29.10.24							
Completion of fitting sea connections	29.5.24	Stern tubes	29.5.24, 16.6.24	Screw shaft and propellers	29.10.24, 30.10.24								
Material of crank shafts	5.7.5	Identification Mark on Do.	603. J.S.C.	Material of thrust shafts	5.7.5	Identification Mark on Do.	9861A						
Material of tunnel shafts	5.7.5	Identification Marks on Do.	603. J.S.C.	Material of screw shafts	5.7.5	Identification Marks on Do.	9861A						
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.) The machinery and boilers of this vessel have been built under special survey in accordance with the approved plans and the Society's Rules and regulations, the materials and workmanship are good. The machinery has been securely fitted on board and satisfactory trial under working conditions and, in our opinion, is eligible for record + LMC 12.24 and notation fitted for oil fuel 12.24. F.P. above 150° F.

It is submitted that this vessel is eligible for THE RECORD. + LMC 12.24. CL.

Oil Engines. 2SC. SA. 24 Cy. 27 1/2 - 39. 3177 NHP. 20B. 120th.

The amount of Entry Fee ...	£ 6 : 0 : 0	When applied for,
Special ...	£ 179 : 8 : 6	26/12/24
Donkey Boilers Fee ...	£ 23 : 8 : 0	
Travelling Expenses (if any) £	✓	13/3/25

W. Lane. Jass Cairns  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

GLASGOW

13 Jan 1925

CERTIFICATE WRITTEN 14/3/25

Assigned + LMC 12.24