

## REPORT ON MACHINERY.

No. 71799

Date of writing Report 20th March 1919 When handed in at Local Office 25 APR 1919 Port of NEWCASTLE  
 No. in Survey held at Newcastle Date, First Survey 30th Oct. 1917 Last Survey 10th April 1919  
 Reg. Book. on the S.S. "San Florentino" (Number of Visits 105) Tons { Gross 12842  
 Net 8107  
 Master 1929 Built at Newcastle By whom built Swan Hunter & Wigham Richardson When built 1919  
 Engines made at Newcastle By whom made The Wallend Shipways Engineering Works No. 777 Engine from 778  
 Boilers made at do By whom made do when made 1919  
 Registered Horse Power 978 Owners The Eagle Oil Transport Co Ltd Port belonging to London  
 Shaft Horse Power at Full Power 4750 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

TURBINE ENGINES, &c.—Description of Engines geared turbine No. of Turbines 3  
 Diameter of Rotor Shaft Journals, H.P. 3 3/4" IP 5 1/2" L.P. 8" Diameter of Pinion Shaft 1 1/2" gear H.P. 5" L.P. 6" 2nd gear 1 1/2"  
 Diameter of Journals 1 1/2" H.P. 1 1/2" L.P. 6" Distance between Centres of Bearings 1 1/2" 30 3/4" 2nd 7 1/2" Diameter of Pitch Circle 1 1/2" H.P. 7 1/4" L.P. 14 1/2" 2nd 19 1/4"  
 Diameter of Wheel Shaft 1 1/2" 1 1/4" 2nd 1 1/2" Distance between Centres of Bearings 1 1/2" 7 1/2" 2nd 7 1/2" Diameter of Pitch Circle of Wheel 1 1/2" 12 1/2" 2nd 12 1/2"  
 Width of Face 1 1/2" 2 1/2" 2nd 3 1/2" Diameter of Thrust Shaft under Collars 1 1/2" Rule dia 17.73" Diameter of Tunnel Shaft 1 1/2" as per rule 16 1/2"  
 No. of Screw Shafts 1 Diameter of same 1 1/2" as fitted 1 1/2" Diameter of Propeller 21" 9" Pitch of Propeller 18 1/2" to 20 1/2"  
 No. of Blades 4 State whether Moveable yes Total Surface 16 5 1/2" Diameter of Rotor 1 1/2" H.P. 1 1/2" L.P. 1 1/2" 2nd 1 1/2"  
 Thickness at Bottom of Groove, H.P. solid L.P. solid Astern solid Revs. per Minute at Full Power, Turbine HP 3700 IP 2082 Propeller 69

## ARTICULARS OF BLADING.

	H.P.			I.P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION	1 1/2" + 2 7/8"	21 1/2" + 22 1/2"	2	1 1/2" + 2 3/4"	23 1/2" + 23 3/4"	2	1 1/2" + 2 7/8"	32 1/2" + 31 1/2"	3
2ND	1 1/2" + 1 7/8"	21 1/2" + 22 3/4"	2	1 1/2" + 2 3/4"	25 1/2" + 25 3/4"	1	1 1/2" + 2 7/8"	58 1/2" + 57 1/2"	3
3RD	1 1/2" + 2 1/8"	21 1/2" + 22 5/8"	2	1 1/2" + 2 3/4"	25 1/2" + 25 3/4"	1	1 1/2" + 2 7/8"	60 5/8" + 61 1/8"	2
4TH	1 1/2" + 2 1/8"	21 1/2" + 22 5/8"	2	1 1/2" + 2 3/4"	25 1/2" + 25 3/4"	1	1 1/2" + 2 7/8"	60 5/8" + 61 1/8"	2
5TH	1 1/2" + 2 1/8"	21 1/2" + 22 5/8"	2	1 1/2" + 2 3/4"	25 1/2" + 25 3/4"	1	1 1/2" + 2 7/8"	60 5/8" + 61 1/8"	2
6TH	1 1/2" + 2 1/8"	21 1/2" + 22 5/8"	2	1 1/2" + 2 3/4"	25 1/2" + 25 3/4"	1	1 1/2" + 2 7/8"	60 5/8" + 61 1/8"	2
7TH	1 1/2" + 2 1/8"	21 1/2" + 22 5/8"	2	1 1/2" + 2 3/4"	25 1/2" + 25 3/4"	1	1 1/2" + 2 7/8"	60 5/8" + 61 1/8"	2
8TH	1 1/2" + 2 1/8"	21 1/2" + 22 5/8"	2	1 1/2" + 2 3/4"	25 1/2" + 25 3/4"	1	1 1/2" + 2 7/8"	60 5/8" + 61 1/8"	2

No. and size of Feed pumps Two main 9 1/2" x 7" x 24". One auxiliary 9 1/2" x 7" x 24"  
 No. and size of Bilge pumps Two 6" x 15"  
 No. and size of Bilge suction in Engine Room One 4 1/2" + two 4", In Boiler Room 2-3 1/2"  
 In Holds, &c. oil vessel

No. of Bilge Injections 1 sizes 15" Connected to condenser, or to circulating pump yes Is a separate Donkey Suction fitted in Engine Room & size yes 6"  
 Are all the bilge suction pipes fitted with roses yes Are the roses in Engine room 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 stokehold 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 the Blow Off Cocks fitted with a spigot and brass covering plate yes  
 What pipes are carried through the bunkers none How are they protected yes  
 Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings 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 none Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record R) Manufacturers of Steel John Spencer & Sons  
 Total Heating Surface of Boilers 12229 1/2 Is Forced Draft fitted yes No. and Description of Boilers Five, single-ended  
 Working Pressure 220 lbs Tested by hydraulic pressure to 440 lbs Date of test 27. 9. 18 No. of Certificate 9157  
 Can each boiler be worked separately yes Area of fire grate in each boiler oil burning No. and Description of Safety Valves to each boiler Two, spring Area of each valve 9.62 sq" Pressure to which they are adjusted 225 lbs Are they fitted with easing gear yes  
 Smallest distance between boilers or plates and bunkers or woodwork 1' 10 1/2" Mean dia. of boilers 14' 11 1/2" Length 12' 0" Material of shell plates steel  
 Thickness 1 1/2" Range of tensile strength 29 1/2 - 33 1/2 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams 3-Lap  
 long. seams 3-BB, 3-Riv Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 10 1/2" Lap of plates or width of butt straps 23 1/2"  
 Per centages of strength of longitudinal joint plates 90.5 Working pressure of shell by rules 247 lbs Size of manhole in shell 16" x 12"  
 Size of compensating ring Mr. Hule No. and Description of Furnaces in each Boiler 3-8ightm Material Steel Outside diameter 46 1/2"  
 Length of plain part top 45" Thickness of plates bottom 4 1/2" Description of longitudinal joint Welded No. of strengthening rings 11"  
 Working pressure of furnace by the rules 249 lbs Combustion chamber plates: Material Steel Thickness: Sides 11" Back 11" Top 11" Bottom 1 1/2"  
 Pitch of stays to ditto: Sides 9 1/2" x 7 1/4" Back 8 1/4" x 7 1/4" Top 8" x 7 1/4" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 230 lbs  
 Material of stays Steel Diameter at smallest part 2.03" Area supported by each stay 70.7 sq" Working pressure by rules 220 lbs End plates in steam space Steel  
 Thickness 1 1/8" Pitch of stays 22 1/4" x 15 1/2" How are stays secured 2. n Working pressure by rules 230 lbs Material of stays Steel  
 Diameter at smallest part 8.48" Area supported by each stay 345 sq" Working pressure by rules 255 lbs Material of Front plates at bottom Steel  
 Thickness 1" Material of Lower back plate Steel Thickness 1" Greatest pitch of stays 14 1/2" Working pressure of plate by rules 255 lbs  
 Diameter of tubes 2 1/4" Pitch of tubes 4" Material of tube plates Steel Thickness: Front 1" Back 1 1/8" Mean pitch of stays 8"  
 Pitch across wide water spaces 13 5/8" Working pressures by rules 222 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 10" x 12" Length as per rule 33" Distance apart 8" Number and pitch of stays in each 3-20 1/2"  
 Working pressure by rules 237 lbs Steam dome: description of joint to shell none % of strength of joint — Diameter —  
 Thickness of shell plates — Material — Description of longitudinal joint — Diameter of rivet holes — Pitch of rivets —  
 Working pressure of shell by rules — Crown plates: Thickness — How stayed —



# ARTICULARS OF BLADING.

## ARTICULARS OF BLADING.

H.P.				L.P.			L.P. ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION .....				2 $\frac{3}{8}$ "	4' - 3 $\frac{3}{4}$ "	1	9 $\frac{1}{2}$ " 7 $\frac{11}{16}$ "	5' - 2 $\frac{1}{16}$ "	1
2ND .....				2 $\frac{9}{16}$ "	4' - 4 $\frac{7}{16}$ "	1	10 $\frac{1}{2}$ " 9 $\frac{11}{16}$ "	5' - 5 $\frac{1}{16}$ "	1
3RD .....				3"	4' - 5 $\frac{3}{8}$ "	1	11 $\frac{1}{2}$ " 10 $\frac{5}{16}$ "	5' - 6 $\frac{11}{16}$ "	1
4TH .....				3 $\frac{7}{16}$ "	4' - 6 $\frac{5}{16}$ "	1	12 $\frac{1}{2}$ " 10 $\frac{3}{8}$ "	5' - 6 $\frac{3}{4}$ "	1
5TH .....				3 $\frac{29}{32}$ "	4' - 7 $\frac{9}{32}$ "	1			
6TH .....				4 $\frac{1}{2}$ "	4' - 8 $\frac{3}{8}$ "	1			
7TH .....				5 $\frac{5}{16}$ "	4' - 9 $\frac{11}{16}$ "	1			
8TH .....				6 $\frac{1}{4}$ "	4' - 11 $\frac{5}{8}$ "	1			

No. and size of Feed pumps

No. and size of Dye suction in Engine Room One H2 & two H, On Boiler Room 2-32

In Holds, &c. oil barrel ✓

(21116110-821112)

Lloyd's Register  
Foundation



SUPERHEATER. Type Robinson Date of Approval of Plan ✓

Date of Test 17-1-19 & 24-1-19

Tested by Hydraulic Pressure to 440 lbs

Diameter of Safety Valve 1 1/2"

Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler yes

Pressure to which each is adjusted 228 lbs

Is Basing Gear fitted yes

IS A DONKEY BOILER FITTED? no

If so, is a report now forwarded? ✓

SPARE GEAR. State the articles supplied:—2 studs & nuts for each size of rotor bearing. 2 studs & nuts for each size of gear wheel & pinion bearings; a set of coupling bolts. 1/20th of total number of bolts & nuts for each gear case joint. 1/20th of total number of bolts & studs & nuts for each turbine casing joint. 2 thermometers for oil circulating system; one set of bearing bushes for each size of wheel shafts. one set of bearing bushes for each size of rotor shafts. one set of bearing bushes for each size of pinion shafts. See also list attached hereto.

The foregoing is a correct description,

FOR THE WALLSEND SLIPWAY & ENGINEERING CO. LIMITED.

Manufacturer.

*W. L. L. L.*

Dates of Survey while building  
During progress of work in shops --  
During erection on board vessel --  
Total No. of visits

Is the approved plan of main boiler forwarded herewith yes

Dates of Examination of principal parts—Casings 9-10-18 Rotors 24-10-18 Blading 24-10-18 Gearing 9-10-18

Rotor shafts 2-9-18 Thrust shaft 24-7-18 Pinion shafts 9-10-18 Screw shaft 30-5-18 Propeller 21-6-18

Stern tube 21-6-18 Steam pipes tested 21-1-19 Engine and boiler seatings 25-11-18 Engines holding down bolts 17-1-19

Completion of pumping arrangements 13-3-19 Boilers fired 17-1-19 Engines tried under steam 13-3-19

Main boiler safety valves adjusted 13-3-19 Thickness of adjusting washers FPB. F<sub>1</sub> A<sub>1</sub> 1/2" FSB. F<sub>2</sub> A<sub>2</sub> 1/2" APB. F<sub>3</sub> A<sub>3</sub> 1/2" ACB. F<sub>4</sub> A<sub>4</sub> 1/2" ASB. F<sub>5</sub> A<sub>5</sub> 1/2"

Material and tensile strength of Rotor shafts Steel 35-38 tons Identification Mark on Do. J. X. 10-18

Material and tensile strength of Pinion shafts Nickel Steel 45-48 tons Identification Mark on Do. J. X. 10-18

Material of Wheel shafts Steel Identification Mark on Do. J. X. 10-18 Material of Thrust shaft Steel Identification Mark on Do. J. X. 7-18

Material of Pinion shafts Steel Identification Marks on Do. J. X. 10-18 Material of Screw shafts Steel Identification Marks on Do. J. X. 5-18

Material of Steam Pipes Iron Test pressure 660 lbs

Is an installation fitted for burning oil fuel yes

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

Have the requirements of Section 49 of the Rules been complied with yes

Is this machinery a duplicate of a previous case no If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.) The engines & boilers of this vessel have been constructed under special survey & the materials & workmanship are found to be good. The engines have been tried under steam & the boiler safety valves adjusted at the working pressure. The machinery is now in good & safe working condition & eligible in my opinion to have the notation of 4 LMC 3-19 fitted for burning oil fuel F.P. above 150°F.

It is submitted that this vessel is eligible for THE RECORD + LMC 4-19 F.D.

2 Steam Turbines geared to 1 Screw Shaft. Fitted for oil fuel 4-19, F.P. above 150°F.

Thomas Field  
Engine Surveyor to Lloyd's Register of Shipping.

The amount of Entry Fee ... £ 3 : 0 : 0  
Special ... £ 68 : 17 : 0  
Donkey Boiler Fee ... £  
Travelling Expenses (if any) £

When applied for,

5 APR 1919

When received,

28.5.19 RBK

29/5/19

Committee's Minute

Assigned

+ LMC 4-19 F.D.  
Fitted for Oil fuel 4-19 F.P. above 150°F

MACHINERY DEPT. OFE  
WRITTEN.



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