Rpt. 4a.

REPORT ON MACHINERY.

No. 11598

Received at London Office THU JUN 7

Date of writing Report ..... 19 ... When handed in at Local Office 29.5.23 19 ... Port of Middlesbrough

No. in Reg. Book. ... Survey held at Glasgow & Middlesbrough Date. First Survey 12th Jan. 1921 Last Survey 25th May 1923

on the Steel Screw steamer LONDON MERCHANT (Number of Visits 100) (S.S.No.19) Tons { Gross ... Net ...

Master ... Built at Haverton Hill By whom built Furness S.B.Co Ltd When built 1923

Engines made at Glasgow By whom made John Brown & Co Ltd (SO 154/20) when made 1921

Boilers made at Middlesbrough By whom made Richardson Westgarth & Co Ltd (2545) when made ...

Registered Horse Power Rule 1010 1004 Owners Furness Withy & Co Ltd Port belonging to ...

Shaft Horse Power at Full Power 5000 Is Refrigerating Machinery fitted for cargo purposes yes Is Electric Light fitted yes

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See Glasgow Report No. 41660

TURBINE ENGINES, &c.—Description of Engines Brown Curtis S.R. Geared Turbine No. of Turbines 2 ✓

Diameter of Rotor Shaft Journals, H.P. 7½" to 14" L.P. 10" to 18" ✓ Diameter of Pinion Shaft HP + LP 9" with 3" hole ✓

Diameter of Journals 9" with 3" hole ✓ Distance between Centres of Bearings 3'-1¼" ✓ Diameter of Pitch Circle 10.012" ✓

Diameter of Wheel Shaft 17" to 25" ✓ Distance between Centres of Bearings 7'-1¼" ✓ Diameter of Pitch Circle of Wheel 144.21" ✓

Width of Face 50 ✓ Diameter of Thrust Shaft under Collars 17¼" ✓ Diameter of Tunnel Shaft as per rule 15.4 as fitted 16" ✓

No. of Screw Shafts one Diameter of same as per rule 16½ as fitted 17½ ✓ Diameter of Propeller 16'-9" ✓ Pitch of Propeller 17'-3" ✓

No. of Blades 4 State whether Moveable no Total Surface 118.2 ☐' ✓ Diameter of Rotor Drum, H.P. ✓ L.P. ✓ astern ✓

Thickness at Bottom of Groove, H.P. ✓ L.P. ✓ Astern ✓ Revs. per Minute at Full Power, Turbine 1270 Propeller 88 ✓

PARTICULARS OF BLADING.

	H.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									
2ND "									
3RD "									
4TH "									
5TH "									
6TH "									
7TH "									
8TH "									

No. and size of Feed pumps Twin feed pumps 13½"×10"×26" : One Aux. Feed 9"×6"×10" Duplex : 3 Forced lubricating 9"×8"×18" simplex

No. and size of Bilge pumps One 6"×6"×6" Duplex : 2 Ballast Duplex 9"×11"×10" ✓ (One Sanitary Duplex 6"×6"×6")

No. and size of Bilge suctions in Engine Room 4 @ 3½" + 1 @ 2½" in duct keel ✓

In Holds, &c. 2 @ 3½" in Nos 1.2.3 holds and fore & after deep tanks 1 @ 3½" in No 4 hold : Tunnel Well 1 @ 2½" ✓

No. of Bilge Injections 1 sizes 14" ✓ Connected to ~~condenser, or to~~ circulating pump yes Is a separate Donkey Suction fitted in Engine Room & size yes 3½" ✓

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 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 are carried through the bunkers none (Duct Keel) ✓ How are they protected ✓

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 yes ✓ Is it fitted with a watertight door yes ✓ worked from Shelter deck ✓

BOILERS, &c.—(Letter for record (S)) Manufacturers of Steel Messrs John Spencer & Sons Ltd ✓

Total Heating Surface of 4 Boilers ~~13760~~ 13165 Is Forced Draft fitted yes ✓ No. and Description of Boilers 4 Single Ended Multitubular ✓

Working Pressure 190 ✓ Tested by hydraulic pressure to 335 ✓ Date of test 30/12/21 & 12/7/22 No. of Certificate 6273 & 6274

Can each boiler be worked separately yes ✓ Area of fire grate in each boiler 81¼ ☐' ✓ No. and Description of Safety Valves to each boiler 2 direct spring ✓ Area of each valve 12.56 ☐" ✓ Pressure to which they are adjusted 195 lbs Are they fitted with easing gear yes ✓

Smallest distance between boilers or uptakes and bunkers or woodwork 2'-6" ✓ Mean dia. of boilers Inlend 17'-6" ✓ Length 12'-0" ✓ Material of shell plates steel ✓

Thickness 1 31/64 ✓ Range of tensile strength 29 - 33 ✓ Are the shell plates welded or flanged no ✓ Descrip. of riveting: cir. seams D. Rivd Lap ✓

long. seams 2 Butt - 3 Rivd ✓ Diameter of rivet holes in long. seams 1½" ✓ Pitch of rivets 10 3/8" ✓ ~~Lap of plates or~~ width of butt straps 22 3/8" ✓

Per centages of strength of longitudinal joint rivets 85.4 plates 85.5 Working pressure of shell by rules 201 ✓ Size of manhole in shell 16"×12" ✓

Size of compensating ring 10 3/8"×1 3/8" ✓ No. and Description of Furnaces in each Boiler 4 Deighton ✓ Material steel Outside diameter 46¾ ✓

Length of plain part top ✓ bottom ... Thickness of plates crown 5/8" ✓ bottom ... Description of longitudinal joint Weld ✓ No. of strengthening rings ✓

Working pressure of furnace by the rules 215 ✓ Combustion chamber plates: Material ~~Steel~~ Thickness: Sides 23/32 ✓ Back 23/32 ✓ 11/16 ✓ Top 11/16 ✓ + 23/32 ✓ Bottom 15/16 ✓

Pitch of stays to ditto: Sides 10⅝"×8½" ✓ Back 10⅞"×8" ✓ Top 10¼"×8" ✓ If stays are fitted with nuts or riveted heads nuts ✓ Working pressure by rules 193 lbs

Material of stays steel ✓ ~~Diameter~~ area at smallest part 2.03 ✓ Area supported by each stay 90.3 ✓ Working pressure by rules 202 lbs End plates in steam space

Material steel ✓ Thickness 1 3/16 ✓ Pitch of stays 20½"×16¾" ✓ How are stays secured nuts & Washers ✓ Working pressure by rules 190 lbs Material of stays steel

~~Diameter~~ area at smallest part 7.24 ✓ Area supported by each stay 347 ✓ Working pressure by rules 219 Material of Front plates at bottom steel

Thickness 15/16" ✓ Material of Lower back plate steel ✓ Thickness 29/32 ✓ Greatest pitch of stays 15"×8" ✓ Working pressure of plate by rules 196 lbs

Diameter of tubes 3¼" ✓ Pitch of tubes 4½"×4½" ✓ Material of tube plates steel Thickness: Front 1¼ ✓ Back 27/32 ✓ Mean pitch of stays 13½"×9" ✓

Pitch across wide water spaces 14¼×9 ✓ Working pressures by rules 195 lbs Girders to Chamber tops: Material steel ✓ Depth and thickness of girder at centre 9"×2" ✓ Length as per rule 32½" ✓ Distance apart 10¼" ✓ Number and pitch of stays in each 3 @ 8" ✓

Working pressure by rules 196 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 ...

W72-0090

SUPERHEATER. Type Schmidt Date of Approval of Plan 2·3·21 Tested by Hydraulic Pressure to 400 lbs

Date of Test 20th & 24th July 1922 Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler yes

Diameter of Safety Valve Cos direct spring 2½" dia Pressure to which each is adjusted 197 lbs Is Easing Gear fitted yes

IS A DONKEY BOILER FITTED? no If so, is a report now forwarded?

SPARE GEAR. State the articles supplied:— 2 Bolts & nuts for each size of Rotor ~~and~~ gear wheel bearings and pinion bearings: One set of coupling bolts for each size: Bolts & nuts for gear case joint & Turbine casing joint: 1 set bearing bushes, each, for gear wheel shaft, Rotor and pinion shafts: one half set packing rings for each gland of rotor shaft: One set pads for Michell thrust & turbine thrust 1 set of liners for adjusting block: one set each of feed & bilge pump valves: one set of lubricating pump valves: 1 bucket & rod for lubricating oil pump: 1 escape valve spring for each size: assorted bolts & nuts & iron: 1 C. iron propeller: 1 screw shaft; 1 air pump bucket & valve: 1 circulating impeller & shaft; 1 set safety valve springs: 1 set feed check valves; 12 dry boiler tubes — See also Glasgow Report No: 41660 for HP & one LP. Pinion.

The foregoing is a correct description,

For and on behalf of
RICHARDSONS, WESTGARTH & Co., Ltd. Manufacturer.

MANAGER MIDDLESBROUGH WORKS.

Dates of Survey while building — During progress of work in shops: 1921. Jan. 12 27 Feb 1·11·15·23 mar 3·9·16 Apl 1·14·18·21·27 may 11·23 June 9 aug 8 Sep 1·9·12·20 Oct 3·12·20; 26 Nov 3·10·14·23·30 Dec 7·9·20·30 (1922) Jan 5 13 20 Feb 2·9·13·17·22 mar 3·16·20·24·27·30 Apl 5 may 29 June 2·28 July 7·12·17·20·24·31 Aug 2·16 Sept 1·6·7·8·20·23·26 Oct 4 5 11 12 13 17 18 20 25 31 Nov 6 10 13 15 16 27 (1923) Jan 10 Feb 14 19 mar 2·8·28 Apl 23 may 2 11 12 14 15 16 18 25

During erection on board vessel:

Total No. of visits 100

Is the approved plan of main boiler forwarded herewith yes ✓

" " " donkey " " "

Dates of Examination of principal parts—Casings Gls 6·5·21 Rotors Gls 5·12·21 Blading Gls 5·12·21 Gearing Gls 5·12·21

Rotor shaft Gls 6·12·21 Thrust shaft Glasgow Tunnel shafts Hfl 23·6·22 Screw shaft Hfl 23·6·22 Propeller 16·8·22

Stern tube Hfl 17·2·22 Steam pipes tested 18/9/22 to 17/10/22 Engine and boiler seatings 20·10·21 Engines holding down bolts 18·10·22

Completion of pumping arrangements 13·11·22 Boilers fixed 16·11·22 Engines tried under steam 25·5·23

Main boiler safety valves adjusted 15·5·23 Thickness of adjusting washers PB P-17/32 S-27/64 Suf 27/64; CBS P-17/32 S-27/64 Suf 27/64; SBS P-17/32 S-27/64 Suf 27/64; FB S-27/64 Suf-27/64

Material and tensile strength of Rotor shaft S. M. steel 34 to 38 tons (Gls) Identification Mark on Do HP 256 a.m.K 5·12·21 LP 284 a.m.K 5·12·21

Material and tensile strength of Pinion shaft Nickel steel 40-45 tons (Gls) Identification Mark on Do HP 277 a.m.K 5·12·21 LP 411 a.m.K 5·12·21

Material of Wheel shaft steel Identification Mark on Do. 253 a.m.K 5·12·21 Material of Thrust shaft steel Identification Mark on Do. 285 A.K

Material of Tunnel shafts W. Iron Identification Marks on Do. 6293 Material of Screw shafts W. Iron Identification Marks on Do. 6293

Material of Steam Pipes Lap welded steel Test pressure 570 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 yes If so, state name of vessel S.S. Feliciana Hull Pfl No. 11282

General Remarks (State quality of workmanship, opinions as to class, &c.. The machinery of this vessel has been built under special survey. The materials and workmanship are sound and good. The machinery has been satisfactorily fitted on board examined under steam and found satisfactory.

The machinery is now in a good and safe working condition and eligible in our opinion to have the notations of ✠ LMC 5·23 and "Fitted for oil fuel 5·23, F.P. above 150° F" in the Register Book

It is submitted that this vessel is eligible for THE RECORD. ✠ LMC 5·23. F.D. C.L. NHP 1004, Fitted for oil fuel 5·23. F.P. above 150°F. 2 Steam turbines S.R. geared to one P.S. DA 8-6-23.

Date of build 1923.

Note:- This vessel is fitted with Electric Light and wireless

		When applied for,
The amount of Entry Fee ...	£ 6 - 0 - 0 ✓	
Special ... Hull Gls	£ 90 - 5 - 0 / 35 - 0 - 0 (See Gls Rpt 41660)	6.6. 1923. paid on Gls 41660
Donkey Boiler Fee ...	£ ✓ : :	When received,
Travelling Expenses (if any)	£ ✓ : :	7-23 1923

Wm Morrison & D. S. Whitford
Engineer Surveyor to Lloyd's Register of Shipping

Committee's Minute TUE. 12 JUN. 1923

Assigned ✠ LMC 5·23. F.D. C.L. Fitted for oil fuel 5·23 F.P. above 150°F. S.R.

(The Surveyors are requested not to write on or below the space for Committee's Minute.)

Certificate (if required) to be sent to