

11 NOV 1910

Rpt. 4.

REPORT ON MACHINERY.

No. 65004.

Port of Liverpool

Received at London Office 19

No. in Survey held at Larston

Date, first Survey 17 Aug Last Survey 9th Nov. 1910

Reg. Book. SUPPLEMENT 16 on the Machinery of the STEEL S.C. Sp. "GOPHER"

(Number of Visits 11.)

Master _____ Built at Larston By whom built Fairlie E.D. & J.B. Co. Ltd. Tons { Gross Net } When built 1910-11

Engines made at Yarmouth By whom made Crabtree & Co. Ltd. when made 1910

Boilers made at Glasgow By whom made David Rowan & Co. when made 1910

Registered Horse Power _____ Owners { Messrs. Harrow & Co. Ltd. } Port belonging to Liverpool

Nom. Horse Power as per Section 28 120 Is Refrigerating Machinery fitted for cargo purposes no. Is Electric Light fitted no.

ENGINES, &c.—Description of Engines Triple Surface Condensing No. of Cylinders Three No. of Cranks 3

Dia. of Cylinders 16"-26"-42" Length of Stroke 27" Revs. per minute 115 Dia. of Screw shaft as per rule Material of screw shaft as fitted

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 water tight in the propeller boss yes. If the liner is in more than one length are the joints burned ✓ 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 ✓ If two liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush _____

Dia. of Tunnel shaft as per rule Dia. of Crank shaft journals as per rule Dia. of Crank pin _____ Size of Crank webs _____ Dia. of thrust shaft under collars _____ Dia. of screw _____ Pitch of Screw _____ No. of Blades _____ State whether moceable _____ Total surface _____

No. of Feed pumps _____ Diameter of ditto _____ Stroke _____ Can one be overhauled while the other is at work _____

No. of Bilge pumps _____ Diameter of ditto _____ Stroke _____ Can one be overhauled while the other is at work _____

No. of Donkey Engines one Sizes of Pumps 6" 8 1/2" x 6" Duplex No. and size of Suctions connected to both Bilge and Donkey pumps _____

In Engine Room 1 @ 2" In Holds, &c. After hold 1 @ 2", Stowage hold 1 @ 2"

No. of Bilge Injections 1 sizes 4" Connected to condenser or to circulating pump yes. Is a separate Donkey Suction fitted in Engine room & size yes - 2"

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 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 Main & Aux. steam pipes. How are they protected lagged & protected by strong stowage.

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.

Dates of examination of completion of fitting of Sea Connections 7-9-10 of Stern Tube 12-8-10 Screw shaft and Propeller 5-7-9-10

Is the Screw Shaft Tunnel watertight none. Is it fitted with a watertight door ✓ worked from _____

BOILERS, &c.—(Letter for record) Manufacturers of Steel

Total Heating Surface of Boilers 2115 Is Forced Draft fitted no. No. and Description of Boilers One single ended.

Working Pressure 180 lbs. Tested by hydraulic pressure to _____ Date of test 22-8-10 No. of Certificate 10553

Can each boiler be worked separately ✓ Area of fire grate in each boiler 59 No. and Description of Safety Valves to each boiler two - spring loaded Area of each valve 7.07 Pressure to which they are adjusted 180 lbs. Are they fitted with easing gear yes.

Smallest distance between boilers or uptakes and bunkers or woodwork 15" Mean dia. of boilers _____ Length _____ Material of shell plates _____

Thickness _____ Range of tensile strength _____ Are the shell plates welded or flanged _____ Descrip. of riveting: cir. seams _____

long. seams _____ Diameter of rivet holes in long. seams _____ Pitch of rivets _____ Lap of plates or width of butt straps _____

Per centages of strength of longitudinal joint _____ Working pressure of shell by rules _____ Size of manhole in shell _____

Size of compensating ring _____ No. and Description of Furnaces in each boiler _____ Material _____ Outside diameter _____

Length of plain part top _____ Thickness of plates bottom _____ Description of longitudinal joint _____ No. of strengthening rings _____

Working pressure of furnace by the rules _____ Combustion chamber plates: Material _____ Thickness: Sides _____ Back _____ Top _____ Bottom _____

Pitch of stays to ditto: Sides _____ Back _____ Top _____ If stays are fitted with nuts or riveted heads _____ Working pressure by rules _____

Material of stays _____ Diameter at smallest part _____ Area supported by each stay _____ Working pressure by rules _____ End plates in steam space: _____

Material _____ Thickness _____ Pitch of stays _____ How are stays secured _____ Working pressure by rules _____ Material of stays _____

Diameter at smallest part _____ Area supported by each stay _____ Working pressure by rules _____ Material of Front plates at bottom _____

Thickness _____ Material of Lower back plate _____ Thickness _____ Greatest pitch of stays _____ Working pressure of plate by rules _____

Diameter of tubes _____ Pitch of tubes _____ Material of tube plates _____ Thickness: Front _____ Back _____ Mean pitch of stays _____

Pitch across wide water spaces _____ Working pressures by rules _____ Girders to Chamber tops: Material _____ Depth and thickness of girder at centre _____ Length as per rule _____ Distance apart _____ Number and pitch of stays in each _____

Working pressure by rules _____ Superheater or Steam chest; how connected to boiler _____ Can the superheater be shut off and the boiler worked separately _____ Diameter _____ Length _____ Thickness of shell plates _____ Material _____ Description of longitudinal joint _____ Diam. of rivet _____

holes _____ Pitch of rivets _____ Working pressure of shell by rules _____ Diameter of flue _____ Material of flue plates _____ Thickness _____

If stiffened with rings _____ Distance between rings _____ Working pressure by rules _____ End plates: Thickness _____ How stayed _____

Working pressure of end plates _____ Area of safety valves to superheater _____ Are they fitted with easing gear _____

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. *none fitted*
 Description *none fitted*
 Made at _____ By whom made _____ When made _____ Where fixed _____
 Working pressure tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____ Fire grate area _____ Description of Safety _____
 Valves _____ No. of Safety Valves _____ Area of each _____ Pressure to which they are adjusted _____ Date of adjustment _____
 If fitted with easing gear _____ If steam from main boilers can enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____
 Material of shell plates _____ Thickness _____ Range of tensile strength _____ Descrip. of riveting long. seams _____ Rivets _____ Plates _____
 Dia. of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____ Lap of plating _____ Per centage of strength of joint _____
 Working pressure of shell by rules _____ Thickness of shell crown plates _____ Radius of do. _____ No. of stays to do. _____ Dia. of stays _____
 Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Thickness of furnace plates _____ Description of joint _____
 Working pressure of furnace by rules _____ Thickness of furnace crown plates _____ Stayed by _____
 Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— *2 connecting rods top & bottom and bolts & nuts; 2 main bearing bolts; 1 set of coupling bolts; 1 set valves for air, circulating, feed, bilge, and donkey pumps; assorted bolts & nuts; iron of various sizes; 2 safety valve springs; set of waste valve springs for cylinders; 6 junk ring bolts; 6 boiler secured stays; 1 main & 1 donkey feed check valve; 1 set fire bars.*

The foregoing is a correct description,

GARSTON GRAVING DOCK & SHIPBUILDING CO. LTD

Manufacturer.

1910. Aug 12, 22, 29. Sept 7, 14, 20. Oct 13, 18, 27. Nov 1, 9.
 Dates of Survey while building
 During progress of work in shops - -
 During erection on board vessel - -
 Total No. of visits *11*

Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts—Cylinders _____ Slides _____ Covers _____ Pistons _____ Rods _____
 Connecting rods _____ Crank shaft _____ Thrust shaft _____ Tunnel shafts _____ Screw shaft *7/9* Propeller *14/9*
 Stern tube *12/5* Steam pipes tested *29-10-10* Engine and boiler seatings *12/27/25/29/7/9* Engines holding down bolts *28/10*
 Completion of pumping arrangements *9-11-10* Boilers fixed *13-10-10* Engines tried under steam *9-11-10*
 Main boiler safety valves adjusted *9-11-10* Thickness of adjusting washers *Pitch in Harbour 1/4"*
 Material of Crank shaft _____ Identification Mark on Do. *2541WDM* Material of Thrust shaft _____ Identification Mark on Do. *191 FLS*
 Material of Tunnel shafts _____ Identification Marks on Do. *190 FLS* Material of Screw shafts _____ Identification Marks on Do. *2546WDM*
 Material of Steam Pipes _____ *Stainless Copper* ✓ Test pressure *360 lbs.* ✓

General Remarks (State quality of workmanship, opinions as to class, &c.)
The engines and boiler of this vessel have been fitted on board at this port. The safety valves of main boiler were adjusted under steam. The machinery examined under full working conditions and found satisfactory, in my opinion, is eligible for record of + LMC 11.10.
 Note:— *The machinery of this vessel is duplicate of that fitted on board the Eng "MUSQUASH" Liverpool Report No. 64964.*

It is submitted that this vessel is eligible for THE RECORD, + LMC 11.10.

JWD 17/11/10
 H.P.S.

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|------------------------------|---|---|---|-------------------------------|
| The amount of Entry Fee.. | £ | : | : | When applied for, from London |
| Special | £ | 5 | 9 | 19-10-19-10 |
| Donkey Boiler Fee | £ | : | : | When received, Liverpool |
| Travelling Expenses (if any) | £ | : | : | 15/10/11/10 |

James Carnaghan
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute LIVERPOOL 11 NOV 1910

Assigned L. No. 6 11.10

MACHINERY CERTIFICATE WRITTEN.



Certificate (if required) to be sent to the Surveyors and returned to the Committee's Minute.