

REPORT ON MACHINERY.

No. 16681

Received at London Office

Date of writing Report 18 May 1914 When handed in at Local Office 20/5/14 Port of Greenock WED. MAY. 27. 1914

No. in Survey held at Port Glasgow Date, First Survey 5th Aug. 1913 Last Survey 16th May 1914
Reg. Book. on the SCREW STEAMER "ROTHER" (Number of Visits 72)

Master C.R. Thorpe Built at Port Glasgow By whom built Clyde S.S. & Eng. Coy. Ltd. When built 1914. Tons Gross 986.09 Net 402.66

Engines made at Port Glasgow By whom made Clyde S.S. & Eng. Coy. Ltd. when made 1914.

Boilers made at Port Glasgow By whom made Clyde S.S. & Eng. Coy. Ltd. when made 1914.

Registered Horse Power Owners The Lancashire & Yorkshire Railway Coy. Port belonging to Goolie.

Nom. Horse Power as per Section 28 349 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes.

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders Three No. of Cranks Three

Dia. of Cylinders 22" 36" 61" Length of Stroke 39" Revs. per minute 88 Dia. of Screw shaft as per rule 12.3" Material of screw shaft Steel
as fitted 12.5" Is the screw shaft fitted with a continuous liner the whole length of the stern tube to Liner fitted 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 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 lapped or protected between the liners Yes Length of stern bush 4' 3"

Dia. of Tunnel shaft as per rule 10.87" Dia. of Crank shaft journals as per rule 11.4" Dia. of Crank pin 11.8" Size of Crank webs 21 x 7 1/2" Dia. of thrust shaft under collars 11.5" Dia. of screw 13.6" Pitch of Screw 16.9" No. of Blades 4 State whether moveable No Total surface 64 sq. ft

No. of Feed pumps 2 Diameter of ditto 4" Stroke 18" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4" Stroke 21" Can one be overhauled while the other is at work Yes

No. of Donkey Engines Two Sizes of Pumps 9" x 10" x 10" 4" x 4" x 5" No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room Three one 2 1/2" dia. & Two 2" dia. In Holds, &c. No. 1 HOLD Two 2" dia. No. 2 HOLD Two 2" dia. No. 3 HOLD Two 2" dia. TUNNEL WELL One 2 1/4" dia.

No. of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size Yes 2 1/2"

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 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 Aboard

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 Hold suction. How are they protected Cased in.

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 15/5/14 of Stern Tube 15/5/14 Screw shaft and Propeller 15/5/14

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from upper platform.

BOILERS, &c.—(Letter for record R.) Manufacturers of Steel Steel Coy. of Scotland Ltd.

Total Heating Surface of Boilers 5370 sq. ft Is Forced Draft fitted Yes No. and Description of Boilers 2: Cylind. Mult. Single

Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 13/1/14 No. of Certificate 1159

Can each boiler be worked separately Yes Area of fire grate in each boiler 60 sq. ft. No. and Description of Safety Valves to each boiler 2: Direct Spring Loaded Area of each valve 9.62 sq. in. Pressure to which they are adjusted 185 lbs Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 6' 6" Mean dia. of boilers 15' 0" Length 11' 6" Material of shell plates Steel

Thickness 1 3/32" Range of tensile strength 28 to 32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap double long. seams Butt strap Diameter of rivet holes in long. seams 1 1/4" Pitch of rivets 8 1/2" 4 3/8" Lap of plates or width of butt straps 18 1/2"

Per centages of strength of longitudinal joint rivets 85% plate 85% Working pressure of shell by rules 184 lbs Size of manhole in shell 17" x 12"

Size of compensating ring Flanged Ring No. and Description of Furnaces in each boiler 3: Masonry Material Steel Outside diameter 46 3/8"

Length of plain part top 8' 1 1/2" Thickness of plates crown 9" bottom 16" Description of longitudinal joint Weld. No. of strengthening rings None

Working pressure of furnace by the rules 190 lbs Combustion chamber plates: Material Steel Thickness: Sides 19/32" Back 19/32" Top 19/32" Bottom 3/4"

Pitch of stays to ditto: Sides 8" x 8" Back 8 1/4" x 8" Top 8" x 8" If stays are fitted with nuts or riveted heads Auto. Working pressure by rules 185 lbs.

Material of stays Iron Diameter at smallest part 1 5/8" Area supported by each stay 66 sq. in. Working pressure by rules 232 lbs End plates in steam space: Material Steel Thickness 1 5/16" Pitch of stays 22 1/2" x 20 1/2" How are stays secured Auto Working pressure by rules 181 lbs Material of stays Steel

Diameter at smallest part 3 1/2" Area supported by each stay 400 sq. in. Working pressure by rules 195 lbs Material of Front plates at bottom Steel

Thickness 1" Material of Lower back plate Steel Thickness 1 5/16" Greatest pitch of stays 15 3/4" Working pressure of plate by rules 211 lbs.

Diameter of tubes 2 1/2" Pitch of tubes 2 3/4" x 3 3/4" Material of tube plates Steel Thickness: Front 1" Back 1 1/16" Mean pitch of stays 9 3/8"

Pitch across wide water spaces 12 1/2" Working pressures by rules 189 lbs 193 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9 1/2" x 1 1/2" Length as per rule 34.7" Distance apart 8" Number and pitch of stays in each 3: 8"

Working pressure by rules 187 lbs Superheater or Steam chest; how connected to boiler None 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

001230-002339-0008

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. *None* Description _____
 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 _____
 Dia. of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____ Lap of plating _____ Per centage of strength of joint _____ Rivets _____ Plates _____
 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 _____ Radius of do. _____ Stayed by _____
 Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— *A Complete set of Spare Gear for Howden's 700 Engine. One C.I. Propeller One Interchangeable Crank Shaft, 2 main Bearing Bolts, 2 Crank pin Bolts, 2 Crosshead Bolts, 1 set Crank Pin Bushes, 1 set Crosshead Bushes, 1 set Coupling Bolts, 1 set valves for Weir's pumps, 1 Piston Rod & Bush for Weir's Pump, 1 set valves for Pelge & Ballast Pumps, 1 Piston Rod & Bush for Pelge & Ballast Pump, 1 set valves for Sanitary Pump, 6 Junk Ring Bolts, 1 set Tools for Condenser Funnels, 1 set Executive Scrap Bolts, 1 Brass air pump Rod, 1 Brass spindle for centrifugal pump, 6 Condenser tubes, Bolt nuts & Iron granular rings.*

The foregoing is a correct description,
Wm. Austin Manufacturer.

Dates of Survey while building	During progress of work in shops --	1913. Aug. 5-6-11-15-29. Sept. 2-3-10-16-19-22-24-25-29-30. Oct. 2-6-9-13-16-20-22-24-27-30. Nov. 4-7-11-14-17-20-24-28. Dec. 2-3-16-17-19-22-23-30. 1914. Jan. 8-13-14-20-21-26-28. Feb. 2-9-11-16-18-20.
	During erection on board vessel ---	March. 6-9-18-22-26-31. April. 3-10-13-15-16-20-24-27. May. 8-14-15-16.
	Total No. of visits	72.

Is the approved plan of main boiler forwarded herewith *Geo.*
 " " " donkey " " " ✓

Dates of Examination of principal parts—Cylinders *20/2/14* Slides *18/2/14* Covers *16/5/14* Pistons *16/2/14* Rods *16/2/14*
 Connecting rods *16/2/14* Crank shaft *22/12/13* Thrust shaft *27/10/13* Tunnel shafts *22/12/13* Screw shaft *6/3/14* Propeller *6/3/14*
 Stern tube *6/3/14* Steam pipes tested at Glasgow Engine and boiler seatings *10/4/14* Engines holding down bolts *10/4/14*
 Completion of pumping arrangements *27/4/14* Boilers fixed *24/4/14* Engines tried under steam *16/5/14*
 Main boiler safety valves adjusted *24/4/14* Thickness of adjusting washers *P.B. pl. 15/5/14* *S.B. pl. 5/5/14*
 Material of Crank shaft *Steel* Identification Mark on Do. *1249* Material of Thrust shaft *Steel* Identification Mark on Do. *1234*
 Material of Tunnel shafts *Steel* Identification Marks on Do. *1250* Material of Screw shafts *Steel* Identification Marks on Do. *8900*
 Material of Steam Pipes *Lap welded Steel* Test pressure *540 lbs.*

General Remarks (State quality of workmanship, opinions as to class, &c.)

The Engines and Boilers of this vessel were built under special Survey and the materials and workmanship are good. When completed they were examined under steam and found to work satisfactorily.

*The machinery throughout is now in good and efficient condition and eligible in my opinion to have the record of **LMC 5, 14** marked in the Society's Register Book.*

It is submitted that this vessel is eligible for THE RECORD, + LMC 5. 14. F.D.

JWA
29/5/14
J.P.R.

Wm. Austin
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

The amount of Entry Fee .. £	3 : . : .	When applied for,
Special	£ 37 : 9 : .	<i>20/5/14</i>
Donkey Boiler Fee	£ : : .	When received,
Travelling Expenses (if any) £	: : .	<i>23/5/14</i>

Committee's Minute **GLASGOW 26 MAY. 1914**

Assigned *+ L.M.C. 574*

MACHINERY CERTIFICATE
 DATED 27.5.14



GREENOCK

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

25/5/14