Rpt. 4.

REPORT ON MACHINERY.

No. 55581

Port of MIDDLESBROUGH-ON-TEES.

Received at London Office FRI. 25 SEP 1908

No. in Reg. Book 488 on the S.S. Ottar. Survey held at Middlesbrough-on-Tees Date, first Survey October 16. 1907 Last Survey 18th Sept 1908 (Number of Visits 44) Tons Gross / Net

Master H. R. Knudsen Built at Farig By whom built Farig Jernskibsbyggeri When built

Engines made at Middlesbrough By whom made Richardsons Westgarth & Co Ltd when made 1908.

Boilers made at Middlesbrough By whom made Richardsons Westgarth & Co Ltd when made 1908.

Registered Horse Power Owners J. C. Knudsen Port belonging to Porsgrund

Nom. Horse Power as per Section 28 192 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes.

ENGINES, &c.—Description of Engines Triple expansion. No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 20"-33"-54" Length of Stroke 36" Revs. per minute 70 Dia. of Screw shaft as per rule 11.86 as fitted 13" Material of screw shaft Steel

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 4'-6"

Dia. of Tunnel shaft as per rule 9.94 as fitted 10" Dia. of Crank shaft journals as per rule 10.43" as fitted 10¾" Dia. of Crank pin 10¾" Size of Crank webs 16" × 7" Dia. of thrust shaft under collars 10¾" Dia. of screw 14'-0" Pitch of Screw 14'-9" No. of Blades 4 State whether moveable No Total surface 65 ft

No. of Feed pumps 2 Diameter of ditto 3" Stroke 19" Can one be overhauled while the other is at work Yes.

No. of Bilge pumps 2 Diameter of ditto 4" Stroke 19" Can one be overhauled while the other is at work Yes

No. of Donkey Engines 2 Sizes of Pumps 4½" × 3" × 4" - 6" × 6" × 10" No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room Five 2½" dia. In Holds, &c. Fore Peak One 2½" Main Hold 2. 2½" After hold 2, 2½" After well 1, 2½"

No. of Bilge Injections 1 sizes 4½" Connected to ~~condenser, or to~~ circulating pump Is a separate Donkey Suction fitted in Engine room & size Yes 3"

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 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 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

Dates of examination of completion of fitting of Sea Connections 8/9/08 of Stern Tube 26-8-08 Screw shaft and Propeller 27-8-08

Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Main deck level.

BOILERS, &c.—(Letter for record (R.)) Manufacturers of Steel The Ryde Bridge Steel Co Ltd

Total Heating Surface of Boilers 2978 ft Is Forced Draft fitted no No. and Description of Boilers 2 S.E. Mults.

Working Pressure 180 Tested by hydraulic pressure to 360 Date of test 10/3/08 No. of Certificate 4106.

Can each boiler be worked separately Yes Area of fire grate in each boiler 45 ft Number and Description of Safety Valves to each boiler 2 Spring loaded Area of each valve 5.9" Pressure to which they are adjusted 180 Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 1'-6" Mean dia. of boilers 13'-0" Length 11'-0" Material of shell plates Steel

Thickness 1 3/32" Range of tensile strength 28/32 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams D.R.L. long. seams TRIPS. Diameter of rivet holes in long. seams 1 3/16" Pitch of rivets 8 3/4" 14 3/16" Lap of plates or width of butt straps 1'-6" × 15" 15/16

Per centages of strength of longitudinal joint rivets 90 plate 85.8 Working pressure of shell by rules 187 Size of manhole in shell 12" × 16"

Size of ~~Compensating~~ ring 8¾" × 1 3/32" No. and Description of Furnaces in each boiler 3 Deighton. Material Steel Outside diameter 3'-3¾"

Length of ~~plain part~~ top / bottom 7'-6" Thickness of plates crown ½" bottom — Description of longitudinal joint welded No. of strengthening rings —

Working pressure of furnace by the rules 203 Combustion chamber plates: Material Steel Thickness: Sides ½" Back ½" Top ½" Bottom ¾"

Pitch of stays to ditto: Sides 9" × 9¾" Back 10½" × 8" Top 8¾" × 10½" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 182.

Material of stays T&S ~~Diameter~~ Area at smallest part 2.09" Area supported by each stay 84" Working pressure by rules 186 End plates in steam space:

Material Steel Thickness 1 5/32" Pitch of stays 18" × 19" How are stays secured D.N.W. Working pressure by rules 185 Material of stays Steel

~~Diameter~~ Area at smallest part 5.93" Area supported by each stay 295" Working pressure by rules 210 Material of Front plates at bottom Steel

Thickness 1" Material of Lower back plate Steel Thickness 29/32" Greatest pitch of stays 16" × 7¼" Working pressure of plate by rules 183

Diameter of tubes 3¼" Pitch of tubes 4½" × 4½" Material of tube plates Steel Thickness: Front 1" Back ¾" Wing 13/16" Mean pitch of stays 11¼"

Pitch across wide water spaces 14¼" Working pressures by rules 188 Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 8½" × 2" Length as per rule 29½" Distance apart 10½" Number and pitch of stays in each 2, 8¼"

Working pressure by rules 224 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 — Is 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* See separate report.

No. *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* *Stayed by*

Diameter of uptake *Thickness of uptake plates* *Thickness of water tubes* *Dates of survey*

SPARE GEAR. *State the articles supplied*:— Two connecting rod top end bolts & nuts, two connecting rod bottom-end bolts & nuts, two main bearing bolts & nuts, 1 set coupling bolts & nuts, 1 set of feed & bilge pump valves, 1 set air pump valves. A bag of assorted bolts & nuts. Iron of various sizes. C.I. Propeller. 2 rings for piston valve. Tail end shaft complete, 1/3 of crank shaft. 6 piston ring bolts, 5 p/c boiler tubes 4 p/c condenser tubes.

The foregoing is a correct description,

For RICHARDSONS, WESTGARTH & Co. Ltd.

J. M. Westgarth

MANAGING DIRECTOR

Manufacturer.

Dates of Survey while building — During progress of work in shops	1907. Oct 16.21. Nov. 9.14.19.21.27. Dec 16. 1908 Jan 6.10.15.22.28. Feb. 8.13. Mar. 4.10.11.18.23. Apr 23 May 5 June 3.16.20.24.29. July 10.22.28. Aug. 5.11.13.14.25.
During erection on board vessel	1908. Aug. 26.27 Sep 1.4.8.10.14.17.18.
Total No. of visits	44

Is the approved plan of main boiler forwarded herewith Yes

" " " *donkey* " " " Yes

Dates of Examination of principal parts—*Cylinders* 6/1/08 *Slides* 22/1/08 *Covers* 10/1/08 *Pistons* 22/1/08 *Rods* 10/1/08

Connecting rods 10/1/08 *Crank shaft* 22/1/08 *Thrust shaft* 13/8/08 *Tunnel shafts* 13/8/08 *Screw shaft* 13/8/08 *Propeller* 10/7/08

Stern tube 11/8/08 *Steam pipes tested* 4/9/08 *Engine and boiler seatings* 26/8/08 *Engines holding down bolts* 8/9/08

Completion of pumping arrangements 8/9/08 *Boilers fixed* 8/9/08 *Engines tried under steam* 10/9/08.

Main boiler safety valves adjusted 10/9/08 *Thickness of adjusting washers* Stbd Boiler Pt 5/16" Stbd 1/4" Port Boiler Pt 7/32" Stbd 9/32"

Material of Crank shaft I. Steel *Identification Mark on Do.* 4627 *Material of Thrust shaft* Steel *Identification Mark on Do.* 6456

Material of Tunnel shafts Steel *Identification Marks on Do* 6455/7/8/9 *Material of Screw shafts* Steel *Identification Marks on Do.* 6453 (Spare 64..)

Material of Steam Pipes Copper *Test pressure* 360 lbs □"

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

The Engines and Boilers of this vessel have been constructed under Special Survey, are of good material and workmanship, and have been fitted and secured on board in accordance with the Rules. They are now in good working condition and in our opinion eligible to have the notation of +LMC 9.08 in the Register Book.

Certificate (if required) to be sent to MIDDLESBROUGH-ON-TEES.

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

It is submitted that this vessel is eligible for THE RECORD +LMC. 9.08.

Electric light.

JWR 25/9/08

25.9.08

The amount of Entry Fee	£	2	0	0
Special	£	28	16	0
Donkey Boiler Fee	£			
Travelling Expenses (if any)	£			

When applied for, 24.9.1908

When received, 6/1/09

J. Haultree & J. Kerr

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

TUES. 29 SEP 1908

Committee's Minute

Assigned +LMC 9.08 Elec. light

MACHINERY CERTIFICATE WRITTEN.