

REPORT ON MACHINERY.

Port of MIDDLESBROUGH-ON-TEES.

Received at London 15th May 1900 FRI. MAY 25 1900

No. in Survey held at Middlesbro'-ou-Tees. Date, first Survey 3rd August 1899 Last Survey 24 March 1900
 Reg. Book 114 on the steel screw steamer "Marburg" (Number of Visits 70) Tons { Gross 6103.73 Net 3971.17
 Master J. Von Künze Built at W. Hartlepool. By whom built Furness, Withy & Co. Ltd. When built 1900.
 Engines made at Middlesbro'-ou-Tees By whom made Sir C. Furness, Matgarth & Co. when made 1900.
 Boilers made at " By whom made " when made 1900.
 Registered Horse Power 495 Owners horddeutscher Lloyd Port belonging to Bremen
 Nom. Horse Power as per Section 28 494. Is Refrigerating Machinery fitted no Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Inverted triple expansion No. of Cylinders 3. No. of Cranks 3.
 Dia. of Cylinders 28", 44", 45" Length of Stroke 48" Revs. per minute 90 Dia. of Screw shaft as per rule 14.28 Lgth. of stern bush
 Dia. of Tunnel shaft as per rule 12.8 Dia. of Crank shaft journals as per rule 13.5-13.6 Dia. of Crank pin 14.5" Size of Crank webs 23" x 10" Dia. of thrust shaft under collars 14.5" Dia. of screw 18.6" Pitch of screw 14.4" No. of blades 4 State whether moceable yes Total surface 95
 No. of Feed pumps 2. Diameter of ditto 4." Stroke 24" Can one be overhauled while the other is at work yes.
 No. of Bilge pumps 2. Diameter of ditto 4.5" Stroke 24" Can one be overhauled while the other is at work yes.
 No. of Donkey Engines Two. Sizes of Pumps Feed 7.5" x 5.6" Duplex No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Three. 3.5" dia. In Holds, &c. Nine. — Two 3.5" dia to No. 1 Hold, Two 3.5" dia to No. 2 hold, Two 3.5" dia to No. 3 hold & one 2.5" dia to aft Well.
 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: 6"
 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 no.
 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.
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock last vessel Is the screw shaft tunnel watertight yes

Is it fitted with a watertight door yes worked from Upper Platform
 CENTRE BOILERS, &c.— (Letter for record S.) Total Heating Surface of Boilers 6881 Is forced draft fitted yes.
 No. and Description of Boilers 1 Centre tube & 2 long. Cyl. built S.E. Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs.
 Date of test 5.2.00 Can each boiler be worked separately yes. Area of fire grate in each boiler 64.6 No. and Description of safety valves to each boiler 3. Spring loaded. Area of each valve 9.62 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 to side bunkers Mean dia. of boilers 15.6" Length 12.0" Material of shell plates S.
 Thickness 1/16" Range of tensile strength 28-32 Are they welded or flanged no. Descrip. of riveting: cir. seams D.P. lap. long. seams all straps.
 Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 9" 1 row 2 rows Lap of plates on width of butt straps 1.9 3/4" x 1 3/8" thick.
 Per centages of strength of longitudinal joint 85.1 Working pressure of shell by rules 200.8 lbs. Size of manhole in shell 16" x 12"
 Size of compensating rings 35 1/2" x 20" x 1 1/16" No. and Description of Furnaces in each boiler 4: Deighton. Material S. Outside diameter 41 3/4"
 Length of plain part top 8.3" Thickness of plates top 1/32" Description of longitudinal joint weld. No. of strengthening rings ✓
 Working pressure of furnace by the rules 196. Combustion chamber plates: Material S. Thickness: Sides 3/32" Back 3/32" Top 3/32" Bottom 1/8"
 Pitch of stays to ditto: Sides 4 1/8" x 4" Back 4 1/8" x 7 3/8" Top 4 1/8" x 4 1/8" If stays are fitted with nuts or riveted heads nuts. Working pressure by rules 196.5
 Material of stays S. Diameter at smallest part 1 3/8" Area supported by each stay 62 Working pressure by rules 193.5 End plates in steam space:
 Material S. Thickness 3/32" Pitch of stays 15 1/2" x 15 1/4" How are stays secured D.N. & W. Working pressure by rules 188. Material of stays S.
 Diameter at smallest part 2 1/2" Area supported by each stay 236 Working pressure by rules 214. Material of Front plates at bottom S.
 Thickness 1/16" Material of Lower back plate S. Thickness 1/8" Greatest pitch of stays 15" x 4 1/8" Working pressure of plate by rules 184.5
 Diameter of tubes 2 1/2" Pitch of tubes 3 3/4" x 3 3/4" Material of tube plates S. Thickness: Front 1" Back 3/4" Mean pitch of stays 4 1/2"
 Pitch across wide water spaces 14 1/2" Working pressures by rules B. 358. Girders to Chamber tops: Material S. Depth and thickness of girder at centre 9" x 1 3/4" Length as per rule 30" Distance apart 4 1/8" Number and pitch of Stays in each 2: 4 1/8"
 Working pressure by rules 269.5 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 ✓

DONKEY BOILER— No. 1 Description *Cyl. Mult-^{or} 2 plain furnaces*
 Made at *Stockton* By whom made *Sudron & Co L^d* When made *6.2.00* Where fixed *Stockholm*
 Working pressure *100 lbs* tested by hydraulic pressure to *200 lbs* No. of Certificate *2143* Fire grate area *25 sq* Description of safety valves *Spring*
 No. of safety valves *2* Area of each *5.94* Pressure to which they are adjusted *100 lbs* If fitted with easing gear *Yes* If steam from main boilers enter the donkey boiler *No* Dia. of donkey boiler *9'-0"* Length *9'-0"* Material of shell plates *S.* Thickness *1 1/2* Range of tenseg. *4 1/2*
 strength *27-32* Descrip. of riveting long. seams *d. butt str.* Dia. of rivet holes *1 3/16* Whether punched or drilled *dr.* Pitch of rivets *2 1/4*
 Lap of plating *8 1/2* Per centage of strength of joint Rivets *97* Thickness of shell *end* plates *1 3/16* Radius of do. No. of Stays to do. *5*
 Dia. of stays *2 1/16* Diameter of furnace Top *31"* Bottom *2* Length of furnace *5-11* Thickness of furnace plates *1 1/2* Description *3 gunite*
 joint *weld.* Thickness of furnace crown plates *5. 1 1/2* Stayed by *1 1/2 in stays 7 1/2 x 7 3/8 p.* Working pressure of shell by rules *100*
 Working pressure of furnace by rules *122 lbs* Diameter of uptake *3 1/4* Thickness of uptake plates *F 1 3/8* Thickness of water tubes *7/16*

SPARE GEAR. State the articles supplied: *2 top & 2 bottom end bolts & nuts, 2 main bearing & 1 set of bolts & nuts, 2 cast iron propeller blades, 1 set each air, air: feed, Bilge & donkey pump valves, 1 slide valve spindle, 1 pair each top & bottom end valves, 1 air & 1 air: pump bucket and rod, 1 set brass bottom rings for W.M.P. pistons, 1 set Springs L.P. pist., 2 safety valve Springs, 1 escape & each stop, nuts & bolts assorted & also of various*

The foregoing is a correct description,
 For Sir CHRISTOPHER FURNESS, WERTGARTH & CO. L^d Manufacturers of Engines & Main Boilers.

H. Jackson.
 Dates of Survey while building
 During progress of work in shops - *1899 Aug: 3, 8, 9, 11, 14, 16, 17, 19, 25, 27, 30 Nov: 1, 4, 8, 10, 14, 15, 17, 18, 20, 21, 23, 27, 29 Dec: 1, 6, 8, 11, 13, 14, 15, 18, 20, 22, 1900*
 During erection on board vessel - *Aug: 11, 13, 16, 19, 23, 26, 29, 30 Feb: 3, 5, 9, 12, 15, 17, 21, 23, 27, Mar: 2, 3, 7, 9, 10, 15, 16, 17, 20, 22, 24*
 Total No. of visits *Sixty-six* W. M. P. 1899 Dec. 18. 1900 Aug. 15. Is the approved plan of main boiler forwarded herewith *Yes*
 8. 15. = 14. " " donkey " " *retained duplicate*

General Remarks (State quality of workmanship, opinions as to class, &c. *The Engines and Boilers of this vessel, have been constructed under Special Survey, in accordance with Rule requirements. The materials and workmanship, are good and efficient. When completed and properly fitted on board, they were tried under steam at moorings with satisfactory results, and are now in good working order and in our opinion eligible for notation L.M.C 5.00 in the Society's Register Book.*

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 5.00. F.D. Electric Light

H.S.
 25.5.00

The amount of Entry Fee... £ 3 : 0 :
 Special ... £ 44 : 14 :
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : :
 When applied for, *23.5.00*
 When received, *24.5.00*

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

Committee's Minute
 Assigned
 + L.M.C. 5.00
 Elect. light

MACHINERY CERTIFICATE WRITTEN.
 Lloyd's Register Foundation

Certificate (if required) to be sent to W. Northpool