

REPORT ON MACHINERY.

Port of MIDDLESBROUGH-ON-TEESReceived at London Office 29 MAR 1900

No. in Survey held at Middlesbrough-on-Tees Date, first Survey 6th March 1899 Last Survey 23rd Mar. 1900
 Reg. Book. 5th S. on the Spiral Screw Steamer "Freiburg" (Number of Visits 17)
 Master - Sejers Built at N. Hartlepool By whom built Turner, Withy & Co. Ld Tons { Gross 6090
 Engines made at Middlesbrough-on-Tees By whom made Sir C. Furness, Portguth & Co. Ld when made 1900.
 Boilers made at 4 By whom made 4 when made 1900.
 Registered Horse Power 495 Owners Norddeutscher Lloyd Port belonging to Bremen
 Nom. Horse Power as per Section 28 495 Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Inverted Triple. No. of Cylinders 3. No. of Cranks 3
 Diameter of Cylinders 28" 44" 75" Length of Stroke 48" Revolutions per minute 80 Diameter of Screw shaft as per rule 14 1/2"
 Diameter of Tunnel shaft as fitted 15 1/2" Diameter of Crank shaft journals 14 1/2" Diameter of Crank pin 14 1/2" Size of Crank webs 23" x 10"
 Diameter of screw 18 1/2" Pitch of screw 16" 0" No. of blades 4 State whether moveable yes. Total surface 95 sq. ft.
 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 1/2" Stroke 24" Can one be overhauled while the other is at work yes.
 No. of Donkey Engines 2 Sizes of Pumps Feed 7 1/2" x 5" 6" Double Ballast 8" x 9" 10" No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Three 3 1/2" dia. in Main, two 3 1/2" in h^o 3, two 3 1/2" in h^o 4, & one 2 1/2" in after well. In Holds, &c. Nine, two 3 1/2" in h^o 1, two 3 1/2" in h^o 2, & one 2 1/2" in after well.
 No. of bilge injections 1 sizes 8" Connected to condenser, or to circulating pump 6. 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 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 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 twice the screw shaft tunnel watertight yes
 Is it fitted with a watertight door yes worked from upper platform

BOILERS, &c.— (Letter for record (r)) Total Heating Surface of Boilers 6902 sq. ft. Is forced draft fitted yes: 4 blowers.
 No. and Description of Boilers Two, long. Cyl. mult. single ended. Working Pressure 180 lbs. Tested by hydraulic pressure to 360 lbs.
 Date of test 3. 8. 99. Can each boiler be worked separately yes. Area of fire grate in each boiler 54.3 sq. ft. No. and Description of safety valves to
 each boiler 2. Direct Spring. 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 side bunkers. Mean diameter of wing boilers 14' 0"
 Length 12' 0" Material of shell plates S. Thickness 1 1/2" Description of riveting: circum. seams D. P. lap. long. seams Stb. straps.
 Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 9 1/2" 4 3/4" Lap of plates or width of butt straps 21 1/4" x 1 1/2" thick.
 Percentages of strength of longitudinal joint 88.3 Working pressure of shell by rules 203 lbs. Size of manhole in shell 16" x 12"
 Size of compensating ring 34 1/2" x 27 1/2" x 1 1/2" No. and Description of Furnaces in each boiler 3: Morrison. Material S. Outside diameter 44 1/2"
 Length of plain part top 8' 3" bottom 8' 3" Thickness of plates top 9 1/2" bottom 9 1/2" Description of longitudinal joint weld. No. of strengthening rings ✓
 Working pressure of furnace by the rules 198 lbs. Combustion chamber plates: Material S. Thickness: Sides 19" Back 32" Top 32" Bottom 1 1/2"
 Pitch of stays to ditto: Sides 7 1/8" x 7 1/4" Back 13" x 1 1/4" Top 7 1/8" x 7 1/8" If stays are fitted with nuts or riveted heads Nuts. Working pressure by rules 203 lbs.
 Material of stays Steel. Diameter at smallest part 1 1/8" Area supported by each stay 60 sq. in. Working pressure by rules 261.2 End plates in steam space:
 Material S. Thickness 1 1/2" Pitch of stays 15" x 15" How are stays secured d. N. & W. Working pressure by rules 234.6 Material of stays S.
 Diameter at smallest part 2 1/2" Area supported by each stay 225 sq. in. Working pressure by rules 224.4 Material of Front plates at bottom S.
 Thickness 3/4" Material of Lower back plate S. Thickness 1 1/2" Greatest pitch of stays 13 1/2" Working pressure of plate by rules 188.5
 Diameter of tubes 2 1/2" Pitch of tubes 3 3/4" x 3 3/4" Material of tube plates S. Thickness: Front 32" x 5/8" Back 32" Mean pitch of stays 9 1/2"
 Pitch across wide water spaces 13 1/2" Working pressures by rules 13.463.6 Girders to Chamber tops: Material S. Depth and
 thickness of girder at centre 8 1/2" x 1 1/2" Length as per rule 29" Distance apart 4 1/2" Number and pitch of Stays in each 2: 9 1/2"
 Working pressure by rules 223.8 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 ✓
 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— Description *Cyl. Mult ar 2 plain furnaces*
 Made at *Stockton* By whom made *Riley Bros* When made *3.12.99* Where fixed *St. Richard Spring*
 Working pressure *100 lb* Tested by hydraulic pressure to *200 lb* No. of Certificate *2115* Fire grate area *27* Description of safety valves *Spring*
 No. of safety valves *2* Area of each *6.94* Pressure to which they are adjusted *100 lb* If fitted with easing gear *Yes* If steam from main boilers *Yes*
 enter the donkey boiler *No* Diameter of donkey boiler *9' 0"* Length *9' 0"* Material of shell plates *S. 27-32* Thickness *1/2"*
 Description of riveting long. seams *d. butt str.* Diameter of rivet holes *1 1/8"* Whether punched or drilled *dr.* Pitch of rivet *3 1/2"*
 Lap of plating *5/8"* Per centage of strength of joint *86.8* Rivets *86.8* Thickness of shell plates *1/2"* Radius of do. *Pitch* of Stays to do. *16 1/2"*
 Dia. of stays *1 1/4"* Diameter of furnace Top *31"* Bottom *25"* Length of furnace *5' 10 1/2"* Thickness of furnace plates *1/2"* Description *Engines*
 joint *welded* Thickness of furnace crown plates *1/2"* Stayed by *1 1/8" s.s. 7 1/2" to 8" p.r.* Working pressure of shell by rules *106 Boilers*
 Working pressure of furnace by rules *123 lb* Diameter of uptake *3 1/2"* Thickness of uptake plates *1 1/8" 13/8"* Thickness of water tubes *5/16"*

SPARE GEAR. State the articles supplied: *2 top & 2 bottom end, 2 main bearing & 1 set Coupling bolts & nuts, 2 propeller blades, 2 rings for pis. valves, 1 set rings H & M.P. pis., 1 set Springs L.P. pis., 1 slide valve rod & distance, 1 set each air & steam valves, 1 set each top & bottom end brasses, 1 Air & 1 Circ. pump rod & shackle, 1 set each air & steam pump valves, 1 1/2 set each feed, bilge & Clackey pump valves, 1 Safety valve spring, 1 Escape valve spring, bolts & nuts assorted & view of various*
 The foregoing is a correct description,
FOR SIR CHRISTOPHER FURNESS, WESTGARTH & CO. LD. Manufacturers of Engines & Marine Boilers.

Dates of Survey: During progress of work in shops - *1899 Mar: 4, 5, 10, 13, 16, 20, 23, 25, 30 Apr: 5, 7, 10, 12, 13, 17, 19, 22, 27, 29 May: 1, 3, 11, 16, 19, 25, 29, 31 June: 2, 5, 8, 12, 14, 22, 26, 27, 29 July: 4, 10, 15, 18, 22, 25, 28 Aug: 3, 3, 5, 10, 11, 22, 23, 24, 25, 29, 30 Sept: 1, 2, 25, 26, 27 Oct: 2, 4, 9, 11, 14, 17, 19, 25, 27, 30 Nov: 1, 4, 5, 10, 11, 15, 22 Dec: 1, 2, 1900 Jan: 4, 5, 9, 10, 11, 12, 15, 16, 17, 18*
 Total No. of visits *(M. d.) 90 (G. P. L.) 1899. Oct. 24, 28. Nov. 8, 15, 17. 1900. Mar. 9, 22. (97.)*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The Machinery of this vessel has been built under Special Survey, in accordance with Rule requirements. The materials, and workmanship, are good and efficient. When completed and fitted on board they were tried under steam at knockings, with satisfactory results, and are now in good working order and in our opinion eligible for notation L.M.C. 3.00 in the Society's Register Book.*

It is submitted that this vessel is eligible for THE RECORD. L.M.C. 3.00. F.D. Elec. Log.

The amount of Entry Fee. £ 3 : 0 :
 Special £ 44 : 15 :
 Donkey Boiler Fee £ : :
 Travelling Expenses (if any) £ : :
 When applied for, 27.3.1900
 When received, 27.3.1900

Committee's Minute

Assigned

+ 2 M.C. 3.00

MACHINERY CERTIFICATE
 WRITTEN



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Lloyd's Register
 Foundation

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