Rpt. 4. No. 21030

REPORT ON MACHINERY.

Port of Sunderland Received at London Office TUES. 5 AUG 1902

No. in Reg. Book. Survey held at Sunderland Date, first Survey 22nd April Last Survey 11th July, 1902 (Number of Visits 6)

on the Screw. Steamer "Benarty" Tons Gross 3910·10 Net 2510·30 (187)

Master John Sarchet Built at Sunderland By whom built Barkaus & Sons When built 1902

Engines made at Sunderland By whom made J. Dickinson & Sons Ld (570) when made 1902

Boilers made at Sunderland By whom made J. Dickinson & Sons Ld when made 1902

Registered Horse Power Owners William Thomson & Co Port belonging to Leith

Nom. Horse Power as per Section 28 352 Is Electric Light fitted No

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

Diameter of Cylinders 26" - 42" 68" Length of Stroke 48 Revolutions per minute 70 Diameter of Screw shaft as per rule 14·16 as fitted 15¼

Diameter of Tunnel shaft as per rule 13·1 as fitted 13" Diameter of Crank shaft journals 13½" Diameter of Crank pin 14" Size of Crank webs patent

Diameter of screw 17'-0" Pitch of screw 18'-0" No. of blades 4 State whether moveable yes Total surface 84 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 4½ Stroke 24" Can one be overhauled while the other is at work yes

No. of Donkey Engines 2 Sizes of Pumps Duplex 7½ × 4½ × 10" Feed vertical 9 × 11 × 10 Ballast No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 2 of 3½ in Engine Room. 2 of 3½ in Boiler Room In Holds, &c. 2 of 3½" in each hold, 3½ to aft well and peak

No. of bilge injections 1 sizes 5" Connected to ~~condenser~~, ~~or~~ to circulating pump C. P Is a separate donkey suction fitted in Engine room & size yes 3½ in each wing

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

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 new vessel Is the screw shaft tunnel watertight yes

Is it fitted with a watertight door yes worked from top platform

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 5500 sq ft Is forced draft fitted No

No. and Description of Boilers Two, Gld al multitubular Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs

Date of test 9.6.02 Can each boiler be worked separately yes Area of fire grate in each boiler 84 sq ft No. and Description of safety valves to each boiler two direct Spring Area of each valve 9.60 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 18" Mean diameter of boilers 17'-0"

Length 11'-0 Material of shell plates Steel Thickness 1⅜ Description of riveting: circum. seams D R Lap long. seams Tr Rivd D.B.S

Diameter of rivet holes in long. seams 1 7/16" Pitch of rivets 9⅞" ~~Lap of plates~~ or width of butt straps 1'-9¼"

Per centages of strength of longitudinal joint rivets 88·9 % plate 85·4 % Working pressure of shell by rules 182 lbs Size of manhole in shell 16" × 12"

Size of compensating ring 8⅞ × 1⅜ No. and Description of Furnaces in each boiler 4 Deightons Material Steel Outside diameter 3'-10"

Length of plain part top — bottom — Thickness of plates crown 9/16" bottom — Description of longitudinal joint welded No. of strengthening rings —

Working pressure of furnace by the rules 191 lbs Combustion chamber plates: Material Steel Thickness: Sides 11/16 Back 11/16 Top 11/16" Bottom ⅞

Pitch of stays to ditto: Sides 9½" × 9" Back 9½" × 9" Top 10" × 9" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 180 lbs

Material of stays Steel Diameter (area) at smallest part 2.03" Area supported by each stay 10" × 9" Working pressure by rules 203 lbs End plates in steam space:

Material Steel Thickness 1⅛" Pitch of stays 19½" × 16½" How are stays secured D. Nuts Working pressure by rules 184 lbs Material of stays Steel

Diameter (area) at smallest part 6.1" Area supported by each stay 19½ × 16½ Working pressure by rules 189 lbs Material of Front plates at bottom Steel

Thickness ⅞" Material of Lower back plate Steel Thickness 29/32" Greatest pitch of stays 15" × 9" Working pressure of plate by rules 186

Diameter of tubes 3¼" Pitch of tubes 4½" Material of tube plates Steel Thickness: Front 15/16" Back ⅞ Mean pitch of stays 9"

Pitch across wide water spaces 13¼ Working pressures by rules 180 lbs Girders to Chamber tops: Material Steel Depth and Thickness of girder at centre 7½ × 1¼ × (2) Length as per rule 32 5/16" Distance apart 10" Number and pitch of Stays in each 3 of 9" pitch

Working pressure by rules 189 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 —

DONKEY BOILER— Description One G.Sandreal Multitubular 2 plain furnaces

Made at Stockton By whom made Riley Bros When made 5-6-02 Where fixed on deck

Working pressure 120 lbs tested by hydraulic pressure to 240 lbs No. of Certificate 2764 Fire grate area 32 sq ft Description of safety valves two direct Spring

No. of safety valves 2 Area of each 7" Pressure to which they are adjusted 120 lbs If fitted with easing gear yes If steam from main boilers can enter the donkey boiler no Diameter of donkey boiler 10'-0" Length 10'-0" Material of shell plates Steel Thickness 11/16

Description of riveting long. seams D Butt Strap Diameter of rivet holes 15/16 Whether punched or drilled drilled Pitch of rivets 3 15/16

Lap of plating 9½-13.8 Per centage of strength of joint Rivets 76.7% Plates 76.2% Thickness of shell ENDS plates 29/32 +4 rivet washers Radius of do. flush No. of Stays to do. 18"

Dia. of stays 2½ eff'd Diameter of furnace Top 38" Bottom Length of furnace 6'-2½" Thickness of furnace plates 9/16 Description of joint welded Thickness of ~~furnace crown~~ C. Chr plates 17/32 to 19/32 Stayed by 1½ eff'd S.S - 8" to 10" pitch, nuts Working pressure of shell by rules 124.5 lbs

Working pressure of furnace by rules 120 lbs Diameter of ~~uptake~~ tube 3½ Thickness of ~~uptake~~ tube plates F 29/32 B 9/16 Thickness of ~~water~~ stay tubes 3/16

SPARE GEAR. State the articles supplied :— Two top end bolts and nuts, two bottom end bolts and nuts, two main bearing bolts and nuts, Spare coupling bolt and nuts, Spare feed and bilge pump valves assorted iron bolts and nuts — Spare single throw crank shaft Tail Shaft two propeller blades - H.P & M.P piston packing rings. various feed & Donkey pump valves.

The foregoing is a correct description,

John Dickinson & Sons Limited

John G Reed Manufacturer.

Dates of Survey while building — During progress of work in shops - - During erection on board vessel - - Total No. of visits 6.

1902.— April 22, 25. May 17. June 13. 18. July 11.

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

ENGINES—Length of stern bush 5'-1" ✓ Diameter of crank shaft journals as per rule ... as fitted 13½" ✓ Diameter of thrust shaft under collars 14"

BOILERS—Range of tensile strength 28/32 T Are they welded or flanged no **DONKEY BOILERS**—No. one Range of tensile strength 28/32

Is the approved plan of main boiler forwarded herewith yes Is the approved plan of donkey boiler forwarded herewith yes

Material of screw shaft Wrought Iron 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 ✓.

The Machinery built under Special Survey the material and workmanship found good and efficient—

The main boilers and steam pipes tested under hydraulic pressure to 360 lbs per sq" and found sound and efficient in every respect at that pressure—

The engines tried under steam at their working pressures and found satisfactory—

In our opinion this Vessel is worthy of the notification of ✠ L M C. 7.02 to be made in the Register Book—

It is submitted that this vessel is eligible for THE RECORD ✠ L M C 7:02

RS 5.8.02

RS 6.8.02

The amount of Entry Fee . .	£ 3 : :	When applied for,	2.8.02
Special	£ 37 : 12 :		
Donkey Boiler Fee	£ : :	When received,	4/8/02
Travelling Expenses (if any)	£ : :		18

Leonard G Shallcross. H W Tibbmore

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

Committee's Minute FRI. 8 AUG 1902

Assigned ✠ L M C 7.02

MACHINERY CERTIFICATE WRITTEN.

Certificate (if required) to be sent to

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