

REPORT ON MACHINERY.

Port of Belfast

Received at London Office 1910 JAN 19 1906

No. in Survey held at Belfast Date first Survey Feb. 24th 1905 Last Survey Jan. 11th 1906

Reg. Book. S.S. Manipur (Number of Visits 69) Tons Gross 7654 Net 4928

Master Belfast Built at Belfast By whom built Harland & Wolff When built 1906

Engines made at Belfast By whom made Harland & Wolff when made 1906

Boilers made at Belfast By whom made Harland & Wolff when made 1906

Registered Horse Power 685 Owners J. F. Brockbank Port belonging Liverpool

Nom. Horse Power as per Section 28 685 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engine Single Screw Quadruple Expⁿ Cylinders 4 No. of Cranks 4
 Dia. of Cylinders 26 1/2 - 39 1/2 - 56 - 78 1/2 Length of Stroke 54 Revs. per minute 71 Dia. of Screw shaft as per rule 15.83 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 Yes 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 64
 Dia. of Tunnel shaft as per rule 14.54 Dia. of Crank shaft journals as per rule 15.33 Dia. of Crank pin 16 Size of Crank webs 21 1/2 x 14 1/2 of thrust shaft under collars 15 1/2 Dia. of screw 18 - 6 Pitch of screw 20 - 0 No. of blades 4 State whether moveable Yes Total surface 95 1/2 sq ft.
 No. of Feed pumps 1 Diameter of ditto 5 1/4 Stroke 30 Can one be overhauled while the other is at work ✓
 No. of Bilge pumps 2 Diameter of ditto 5 Stroke 30 Can one be overhauled while the other is at work Yes
 No. of Donkey Engines See other sheet No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 5 - 1 1/2 3 - 2 1/2 In Holds, &c. 9 - 3 1/2 5 - 2 1/2

No. of bilge injections 1 sizes 9 1/2 Connected to condenser, or to circulating pump Pumps Is a separate donkey suction fitted in Engine room & size Yes - 4
 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 Both
 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 Before launching Is the screw shaft tunnel watertight Stitch to be
 Is it fitted with a watertight door Yes worked from E. Room Top platform

BOILERS, &c.— (Letter for record 5) Total Heating Surface of Boilers N. End 8142 sq ft. S. End 4212 sq ft. Forced draft fitted No
 No. and Description of Boilers 2. N. End. Cylind^r Working Pressure 216 lbs Tested by hydraulic pressure to 430 lbs
 Date of test 10-1-05 Can each boiler be worked separately Yes Area of fire grate in each boiler N. End 115 sq ft. S. End 57 sq ft. Description of safety valves to each boiler 3 - Relief of spring Area of each valve 9.62 sq in pressure to which they are adjusted 215 lbs Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork about 4 in Mean dia. of boilers 14 - 5 1/2 Length 18 - 9 Material of shell plates Steel
 Thickness 1 1/2 Range of tensile strength 29 - 32 Are they welded or flanged No Descrip. of riveting: cir. seams Lap or Long seams Butt Single
 Diameter of rivet holes in long. seams 1 1/8 Pitch of rivets 10 Lap of plates or width of butt straps 22 1/2
 Per centages of strength of longitudinal joint rivets 93.2 Working pressure of shell by rules 246 lbs Size of manhole in shell 16 x 12
 Size of compensating ring M. Wells No. and Description of Furnaces in each boiler 6 - Reighton Material Steel Outside diameter 46 1/2
 Length of plain part top 4 bottom 11 Thickness of plates crown 3 1/4 bottom 3 1/8 Description of longitudinal joint Weld No. of strengthening rings 4 - 7.5 in
 Working pressure of furnace by the rules 244 lbs Combustion chamber plates: Material Steel Thickness: Sides 1 1/8 Back ✓ Top 1 1/2 Bottom 3/4
 Pitch of stays to ditto: Sides 7 1/2 x 7 Back ✓ Top 7 1/2 x 7 1/2 Are stays fitted with nuts or riveted heads Nuts in sides Working pressure by rules 216 lbs
 Material of stay Steel Diameter at smallest part 1 1/8 Area supported by each stay 54 sq in Working pressure by rules 218 lbs End plates in steam space: Material Steel Thickness 1 1/8 Pitch of stays 16 x 14 1/2 How are stays secured Nuts in webs Working pressure by rules 286 lbs Material of stay Steel
 Diameter at smallest part 2 1/8 - 2 1/2 Area supported by each stay 232 sq in Working pressure by rule 240 lbs Material of Front plates at bottom Steel
 Thickness 1 1/8 Material of Lower back plate ✓ Thickness ✓ Greatest pitch of stays ✓ Working pressure of plate by rules ✓
 Diameter of tubes 2 3/4 Pitch of tubes 4 x 4 Material of tube plates Steel Thickness: Front 1 1/8 Back 1 1/4 Mean pitch of stays 8 x 8
 Pitch across wide water spaces 14 Working pressures by rules 338 lbs Chamber tops: Material Iron Depth and thickness of girder at centre 9 x (8 x 2) Length as per rule 49 1/2 Distance apart 7 1/8 Number and pitch of Stays in each 6 - 7 1/2
 Working pressure by rules 299 lbs 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 ✓
 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. _____ Description _____

Made at _____ By whom made _____ When made _____ Where fixed _____

Working pressure tested by hydraulic pressure to _____ No. of Certificate _____ Fire grate area _____ Description of safety valves _____

No. of safety valves _____ Area of each _____ Pressure to which they are adjusted _____ 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 _____ 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 _____

Thickness of furnace crown plates _____ Stayed by _____ Working pressure of shell by rules _____

Working pressure of furnace by rules _____ Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____

SPARE GEAR. State the articles supplied:—

Leather Sheet

The foregoing is a correct description,
Harland & Wolff Ltd Manufacturer.

Dates of Survey while building

During progress of work in shops—	1905 Feb. 2, 4, 14, 14, 23, 31	April 4, 7, 14, 19	May 4, 9, 12, 26, 31	June 2, 5, 15, 21, 23, 30	July 6	Aug. 1906
	9, 11, 15, 21, 24, 28, 31	Sep. 6, 8, 12, 14, 19, 26	Oct. 4, 11, 13, 13, 14, 20, 24, 26, 26	Nov. 1, 3, 6, 10, 16	Dec. 4, 6, 11, 12, 18, 21	Jan. 4, 11
	Total No. of visits 69					

Is the approved plan of main boiler forwarded herewith *Yes*

“ “ “ donkey “ “ “ *Yes*

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

The machinery of this vessel, which is a duplicate of that fitted on the S. Malakand, has been constructed under Special Survey, and in accordance with the Rules. The materials and workmanship are of good description, and on trial under steam in Belfast Lough, it worked satisfactorily. In my opinion, it is eligible for record. **L.M.C.**

1-06.

It is submitted that this vessel is eligible for **THE RECORD** **L.M.C. 1-06** **ELEC. LIGHT.**

19.1.06
19.1.06

R. J. Beveridge
 Engineer (Surveyor to Lloyd's Register of British & Foreign Shipping.)

The amount of Entry Fee. £ 3 : - :
 Special £ 54 : 5 :
 Donkey Boiler Fee £ : :
 Travelling Expenses (if any) £ : :
 Committee's Minute
 Assigned

When applied for, 18-1-19-06
 When received, 26/1/06
 27/1/06

TUES. 23 JAN 1906
 + L.M.C. 1.06
 elec. light



Certificate (if required) to be sent to _____

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