

REPORT ON MACHINERY.

Port of Belfast

Received at London Office 12 APR. 92

No. in Survey held at Belfast
Book.

Date, first Survey Sept 14th 1891 Last Survey April 9th 1892
(Number of Visits 29)

on the Steel Twin Screw Steamer "Manitoba"

Tons { Gross 5591
Net 3604

Master R. Griffith Built at Belfast

By whom built Harland & Wolff Ltd When built 1892

Engines made at Belfast

By whom made Messrs Harland & Wolff (Lim) when made 1892

Motors made at Belfast

By whom made Messrs Harland & Wolff (Lim) when made 1892

Registered Horse Power 600

Owners Williams, Torrey & Field Ltd Port belonging to London

Horse Power as per Section 28 599.5

ENGINES, &c.— Description of Engines Triple Expansion Twin Screws No. of Cylinders Six

Diameter of Cylinders 22 1/2, 36 1/2 & 60" Length of Stroke 48" Revolutions per minute 72 Diameter of Screw shaft as per rule 11.7
as fitted 13 ins

Diameter of Tunnel shaft as per rule 14 1/2 Diameter of Crank shaft journals 12 3/4 Diameter of Crank pin 12 3/4 Size of Crank webs 9" x 16" shaped
as fitted 12 1/4

Diameter of screw 15" 4 1/2" Pitch of screw 21 ft No. of blades 3 State whether moveable yes Total surface 60 sq each set

No. of Feed pumps two Diameter of ditto 3 1/2 Stroke 2.4" Can one be overhauled while the other is at work One pump on each engine

No. of Bilge pumps two Diameter of ditto 5" Stroke 2.4" Can one be overhauled while the other is at work " " " "

No. of Donkey Engines Four Sizes of Pumps { Worthington duplex 9" x 6" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps
5" x 3 1/2" x 5"
Watsons Westminster ballast 10" x 10" x 10"

Engine Room Three 3" to both bilge & Weir fed 10" x 8" x 24" In Holds, &c. No 1 hold; two 2 1/2" No 2 hold, two 2 1/2"

Key pumps: 1 one 2 1/2" donkey suction No 3 hold two 2 1/2 ins No 4 hold one 3" No 5 two 2 1/2"
Lunnel well 2 1/2"

Bilge injections 2 sizes 6" Connected to condenser, or to circulating pump circ. p. Is a separate donkey suction fitted in Engine room of size yes 2 1/2"

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
except bilge injectⁿ

All connections with the sea direct on the skin of the ship yes Are they Valves or Cocks Valves & Cocks

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 below

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

How are the pipes carried through the bunkers lead bilge pipes How are they protected strong wood casing

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

Were stern tube, propeller, screw shaft, and all connections examined in dry dock examined before launching Is the screw shaft tunnel watertight yes

Is it fitted with a watertight door yes worked from level of upper deck

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 10500

Kind and Description of Boilers Two double ended & two single ended Working Pressure 175 lb Tested by hydraulic pressure to 350 lb

Can each boiler be worked separately yes Area of fire grate in each boiler d.e. 109 No. and Description of safety valves to S.E. 54

Boiler Cockburn's, two each boiler Area of each valve d.e. 17.7 Pressure to which they are adjusted 175 lb Are they fitted S.E. 895

Casing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 5' 6" to corner of bunkers in stokehold Mean diameter of boilers 14' 1"

Material of shell plates Steel Thickness 1 1/2" Description of riveting: circum. seams treb. riv. doub. long. seams treb. riv. doub. shaps.

Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 9" 9 4 1/2" Lap of plates or width of butt straps shaps 20 1/2 x 1 1/16

Percentages of strength of longitudinal joint 88.40 Working pressure of shell by rules 175.1 lb Size of manhole in shell 16" x 12"

No. of compensating ring 2' 7" x 2' 3" x 1 1/2" No. and Description of Furnaces in each boiler 6 in Doub. End. 3 " Sing " Material Steel Outside diameter 3' 4 1/2"

Thickness of plates top ribs 17/32 Description of longitudinal joint Weld. Ribbed flues No. of strengthening rings 9 ribs
bottom 9"

Working pressure of furnace by the rules 185 lb Combustion chamber plates: Material Steel Thickness: Sides 19/32 Back 19/32 Top 5/8 Bottom 3/4
nuts inside

No. of stays to ditto: Sides 7 7/8 x 7 7/8 Back 7 1/2 x 7 7/8 Top 8 x 8 1/4 If stays are fitted with nuts or riveted heads nuts outside Working pressure by rules 196 lb
62 sides Working pressure by rules 177 lb End plates in steam space: 66 top Working pressure by rules 179 lb

Material of stays Steel Diameter at smallest part 1 3/8" Area supported by each stay 66 top Working pressure by rules 177 lb Material of stays Steel

Thickness 3 1/32 Pitch of stays 16 3/4 x 17 1/4 How are stays secured double nuts & largest washers Working pressure by rules 177 lb Material of Front plates at bottom Steel

Diameter at smallest part 2 5/8" Area supported by each stay 278 Working pressure by rules 178 lb Material of Front plates at bottom Steel

Thickness 13/16 Material of Lower back plate Steel Thickness 29/32 Greatest pitch of stays as approx Working pressure of plate by rules 175 lb

Diameter of tubes 3 1/4" Pitch of tubes 4 1/2" Material of tube plates Steel Thickness: Front 7/8 Back 3/4 Mean pitch of stays 9"

Working pressures by rules 175 lb + Girders to Chamber tops: Material W iron Depth and two pitch 8" D.E.
two " 8" S.E.

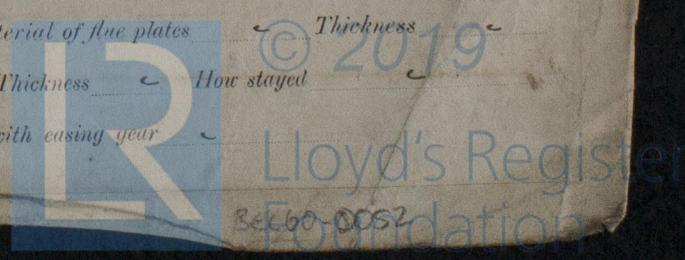
Working pressure by rules S.E. 220 Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked yes

Material of Front plates at bottom Steel Description of longitudinal joint " Diam. of rivet "

Pitch of rivets " Working pressure of shell by rules " Diameter of flue " Material of flue plates " Thickness "

End plates: Thickness " How stayed "

Working pressure of end plates " Area of safety valves to superheater " Are they fitted with casing gear "



DONKEY BOILER— 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 _____
 Diameter of donkey boiler _____ Length _____ Material of shell plates _____ Thickness _____
 Description of riveting long seams _____ Diameter 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:— I.P. valve spindle. Pair con. rod brasses. Air pump bucket, rod head valve seat & guard, 9 set valves. Centrifugal spindle & impeller. 2 main bearing bolts & nuts. 2 top end & two bottom end con. rod bolts & nuts. Set coupling bolts. 2 propeller blades & 8 studs & nuts. Set crosshead brasses. Set pump link brasses. Cyl. escape valve & spring. Eccentric strap. Set piston & piston rings. 6 shaft ring bolts. 6 cyl cover bolts. 4 valve chest bolts. Set feed & edge pump valves & seals. Set springs for safety & escape valves. 8 propeller studs & nuts. Set feed check valves. 10 boiler tubes assorted bolts & nuts.

The foregoing is a correct description,
Horland & Co. Ltd. Manufacturer.

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

The machinery of this vessel has been constructed under special survey throughout & in accordance with the approved drawings of the boilers herewith returned.

The workmanship is good throughout; the steel has been tested as the Rules require, & each of the boilers & each separate length of main steam pipe have been tested by water pressure to double the working pressure.

The safety valves of the starboard boiler & of the after middle boiler are adjusted to blow off at 175 lbs per sq inch. It is arranged that the valves of the remaining two boilers shall be adjusted in London where the vessel proceeds to load.

The vessel is lighted throughout by electricity; the particulars will be forwarded on the usual form shortly.

The machinery, in my opinion, renders the vessel eligible for the record of **+ L.M.C. 4.92** in the Register's Book

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

This report to be handed to the Local Engineer Surveyor for his guidance in completing this survey & also to visit the vessel in a dock in order to witness on board.

It is submitted that this vessel WILL BE eligible for the record + L.M.C. 4-92 when the safety valves of the remaining two main boilers have been adjusted under steam.

Certificate (if required) to be sent to _____
 The amount of Entry Fee.. £ 3 - 0 - 0
 Special R. £ 50 : 0 : 0
 Donkey Boiler Fee £ : :
 Travelling Expenses (if any) £ : :
 When applied for, 11th Apr 1892
 When received, 12/4/92

WALTER WHITE
 ARCHITECT
 5/5/92

A. L. Jones

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

Committee's Minute **THURS. 14 APL 1892** **TUES. 26 APL 1892**

Assigned

+ L.M.C. 4.92



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