

REPORT ON MACHINERY.

Port of Belfast

Received at London Office 19

No. in Survey held at Belfast Date, first Survey Oct. 14th 1904 Last Survey May 16th 1905

Reg. Book. B.S. "Aquare" (Number of Visits 52)

Master Belfast Built at Belfast By whom built Workman Clark & Co. Ltd. Tons Gross 2891 Net 2483 When built 1905

Engines made at Belfast By whom made Workman Clark & Co. Ltd. when made 1905

Boilers made at Belfast By whom made " when made "

Registered Horse Power 574 Owners Elders & Fyffes (Shipping) Ltd. Port belonging to Belfast

Nom. Horse Power as per Section 28 574 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

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

Dia. of Cylinders 27"-44"-75" Length of Stroke 48" Revs. per minute 80 Dia. of Screw shaft 14.58" Material of 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 ✓ 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 62"

Dia. of Tunnel shaft 13.59" Dia. of Crank shaft journals 14.26" Dia. of Crank pin 14.5" Size of Crank webs 26 1/2 x 9 1/2" Dia. of thrust shaft under collars 14 1/2" Dia. of screw 16"-9" Pitch of screw 18"-6" No. of blades 4 State whether moveable Yes Total surface 82 sq ft.

No. of Feed pumps 2 Diameter of ditto 4 1/2" Stroke 27" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 27" Can one be overhauled while the other is at work Yes

No. of Donkey Engines Four No. and size of Suctions connected to both Bilge and Donkey pumps 4-3 1/2" + 1-2 1/2"

In Engine Room 4-3 1/2" In Holds, &c. 4-3 1/2" + 1-2 1/2"

No. of bilge injections / sizes 9-5" Connected to condenser, or to circulating pump Pumps a separate donkey suction fitted in Engine room & size Yes-3 1/2"

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 Fore Hold suction How are they protected Wood casings

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 State to be

Is it fitted with a watertight door Yes worked from Top platform E-Room.

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 10800 sq ft. Is forced draft fitted No

No. and Description of Boilers 4- Single End Cylind. Working Pressure 190 lbs Tested by hydraulic pressure to 380 lbs

Date of test 28-3-15 Can each boiler be worked separately Yes Area of fire grate in each boiler 78 1/2 sq ft. and Description of safety valves to each boiler Two - Direct Spring Area of each valve 9.62 sq in. Pressure to which they are adjusted 195 lbs Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 14" Mean dia. of boilers 16'-6" Length 11'-0" Material of shell plates Steel

Thickness 1 1/8" Range of tensile strength 28-32 Are they welded or flanged No Descrip. of riveting: cir. seams Lap Riv. long. seams Butt Joints

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. 94.7 Working pressure of shell by rules 220 lbs Size of manhole in shell 16" x 12"

Size of compensating ring 12" Nails No. and Description of Furnaces in each boiler 4 - Brighton Material Steel Outside diameter 45 1/2"

Length of plain part top 6" bottom 10" Thickness of plates crown 3 3/8" bottom 3 1/4" Description of longitudinal joint Welded No. of strengthening rings ✓

Working pressure of furnace by the rules 215 lbs Combustion chamber plates: Material Steel Thickness: Sides 1 1/2" Back 1 1/2" Top 1 1/2" Bottom 1"

Pitch of stays to ditto: Sides 8 1/2 x 7 1/2" Back 8 x 7 1/2" Top 9 x 6 1/2" If stays are fitted with nuts or riveted heads Nuts inside Working pressure by rules 196 lbs

Material of stay Steel Diameter at smallest part 1 1/8" Area supported by each stay 6 1/8 sq in. Working pressure by rules 190 lbs End plates in steam space: Material Steel Thickness 1 1/2" Pitch of stays 18 1/2 x 14" How are stays secured Nuts & Washers Working pressure by rules 267 lbs Material of stays Steel

Diameter at smallest part 2 1/8" Area supported by each stay 288 sq in. Working pressure by rules 251 lbs Material of Front plates at bottom Steel

Thickness 1" Material of Lower back plate Steel Thickness 3/8" Greatest pitch of stays 13 1/2" Working pressure of plate by rules 219 lbs

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

Pitch across wide water spaces 14 1/2" Working pressures by rules 190 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9 1/2 x 4 x 2" Length as per rule 29 1/8" Distance apart 9 x 8" Number and pitch of Stays in each 3-6 1/2"

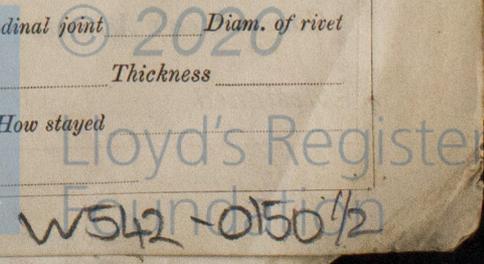
Working pressure by rules 238 lbs Superheater or Steam chest; how connected to boiler ✓ Can the superheater be shut off and the boiler worked separately ✓

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 "

If not, state whether, and when, one will be sent? To a Report also sent on the Hull of the Ship?



W542-0150/2

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:—

The foregoing is a correct description,

FOR WORKMAN, CLARK & CO., LIMITED Manufacturer.

M. H. Bell.

Dates of Survey while building
 During progress of work in shops - 1904: Oct. 17-21-31 Nov. 2, 4, 7, 10, 14, 18, 24, 29 Dec. 2, 7, 10, 14, 16, 20, 23 Jan. 3, 5, 9, 12, 18, 24, 27, 31 Feb. 3, 6, 9, 14, 17, 21, 23-24, 28 Mar. 1, 6, 16, 21, 24, 27, 28-29 April, 1-3, 5-6-10, 13-25 May 10, 16.
 Total No. of visits 52
 Is the approved plan of main boiler forwarded herewith Yes

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

The machinery of this vessel has been constructed under special survey, and in accordance with the Rules. The workmanship, and the materials used in its construction, are of good description throughout, and an excellent steam, in Belfast Lough, it worked satisfactorily.

In my opinion, it is eligible for record + L.M.C. 5-05 and "Electric Light" repairs on the Electric Light installation, will be sent later.

It is submitted that this vessel is eligible for THE RECORD L.M.C. 5.05. ELEC. LIGHT. REF. MCHY.

M.H. Bell
 22.5.05

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

The amount of Entry Fee... £ 3-0
 Special... £ 48-17
 Donkey Boiler Fee... £
 Travelling Expenses (if any) £

Committee's Minute TUES. 23 MAY 1905
 Assigned + L.M.C. 5.05

MACHINERY CERTIFICATE WRITTEN

S.P. Curran
 Donkey Pumps
 Ballast 4' x 9' x 9' Duplex
 2 Main Feed 8' x 10 1/2' x 24
 Auxiliary Feed 6' x 4 1/2' x 6
 Fresh Water 4' x 4' x 6
 General 4' x 5' x 8
 Refrigerating 7' x 8 1/2' x 8

Spare Gear

Propeller Shaft
 2 Propeller Blades
 Sets - Studs & nuts
 1 Pair Crank Pin bushes
 - Crosshead
 1 Air pump rod; 2 guards & studs; set valves
 2 Like valve & springs
 2 Eccentric strap bolts
 Sets H.P. & M.P. piston rings
 2 cylinder escape valves; 2 springs
 8 Boiler joint check valves
 1 Feed escape valve; 2 springs
 2 Safety valve & springs
 Fan & pulley for Centrifugal Pump
 Spare gear - Engine
 Breakdown shaft pumping
 50 Condenser tubes
 24 Boilers
 12 Link ring bolts set & set
 and all gear to our Rules additional.

R. J. Beveridge