

REPORT ON MACHINERY.

No. 34676

Received at London Office
 State of writing Report 19 When handed in at Local Office 19 Port of Glasgow THU. DEC. 24. 1914
 No. in Survey held at Glasgow Date, First Survey 4/9/13 Last Survey 17/12 19 14
 Reg. Book. 101 on the M/S "PANGAN." (Number of Visits 88)
 Tons } Gross 3487.
 Net 2224.
 Master Built at Glasgow By whom built Barclay Curle & Co. Ltd. When built 1909-3.
 Engines made at Glasgow By whom made Burmister & Wain Oil Eng. Co. when made 1914.
 Boilers made at the main Boilers By whom made ✓ when made ✓
 Registered Horse Power Owners East-Asiatic Co. Port belonging to Bangkok.
 Nom. Horse Power as per Section 29 324 Is Refrigerating Machinery fitted for cargo purposes no. Is Electric Light fitted yes.

ENGINES, &c.—Description of Engines Burmister & Wain Diesel System, 4 stroke cycle. No. of Cylinders 6 No. of Cranks 6
 Dia. of Cylinders 670 mm - 300 H.P. each Length of Stroke 1000 mm Revs. per minute 85 Dia. of Screw shaft as per rule Material of screw shaft old shaft
 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
 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 yes. If two
 liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 4'-8 3/4"
 Dia. of Tunnel shaft as per rule Dia. of Crank shaft journals as per rule Dia. of Crank pin 410 mm Size of Crank webs 580 x 194 mm Dia. of thrust shaft under
 bars 1 1/4" Dia. of screw 1 1/2" Pitch of Screw 10-12 No. of Blades 4 State whether moveable no Total surface 53.5 sq. ft.
 No. of Feed pumps 2 Independent Diameter of ditto 6" x 4" x 6" + 7" x 5" x 8" Stroke 7" + 5" x 8" Can one be overhauled while the other is at work yes.
 No. of Bilge pumps 5 Diameter of ditto see donkeys below Stroke Can one be overhauled while the other is at work yes.
 No. of Donkey Engines 5 Sizes of Pumps 6" x 4" x 6" - 7" x 5" x 8" - 5" x 5" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps
 Engine Room 3'-3" 8" x 8" x 8" In Holds, &c. 2'-3" in each hold.

No. of Bilge Injections 1 sizes 7" Connected to condenser, or to circulating pump pump Is a separate Donkey Suction fitted in Engine room & size yes - 3"
 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 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 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.
 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.
 Dates of examination of completion of fitting of Sea Connections and of Stern Tube and Screw shaft and Propeller 22. 4. 14.
 Is the Screw Shaft Tunnel watertight yes. Is it fitted with a watertight door yes. worked from Upper deck.

MANIFOLDERS, &c.—(Letter for record) Manufacturers of Steel

Heating Surface of Boilers Is Forced Draft fitted No. and Description of Boilers
 Working Pressure Tested by hydraulic pressure to Date of test No. of Certificate
 Can each boiler be worked separately Area of fire grate in each boiler No. and Description of Safety Valves to
 boiler Area of each valve Pressure to which they are adjusted Are they fitted with easing gear
 Mean distance between boilers or uptakes and bunkers or woodwork Mean dia. of boilers Length Material of shell plates
 Thickness Range of tensile strength Are the shell plates welded or flanged Descrip. of riveting: cir. seams
 Seams Diameter of rivet holes in long. seams Pitch of rivets Lap of plates or width of butt straps
 Percentages of strength of longitudinal joint Working pressure of shell by rules Size of manhole in shell
 No. of compensating ring No. and Description of Furnaces in each boiler Material Outside diameter
 Thickness of plain part top Thickness of plates crown Description of longitudinal joint No. of strengthening rings
 Working pressure of furnace by the rules Combustion chamber plates: Material Thickness: Sides Back Top Bottom
 No. of stays to ditto: Sides Back Top If stays are fitted with nuts or riveted heads Working pressure by rules
 Material of stays Diameter at smallest part Area supported by each stay Working pressure by rules End plates in steam space:
 Material Thickness Pitch of stays How are stays secured Working pressure by rules Material of stays
 Diameter at smallest part Area supported by each stay Working pressure by rules Material of Front plates at bottom
 Thickness Material of Lower back plate Thickness Greatest pitch of stays Working pressure of plate by rules
 Diameter of tubes Pitch of tubes Material of tube plates Thickness: Front Back Mean pitch of stays
 Working pressures across wide water spaces Working pressures by rules Girders to Chamber tops: Material Depth and
 Thickness of girder at centre Length as per rule Distance apart Number and pitch of stays in each
 Working pressure by rules Superheater or Steam chest; how connected to boiler Can the superheater be shut off and the boiler worked
 Diameter Length Thickness of shell plates Material Description of longitudinal joint Diam. of rivet
 Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness
 Fitted 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

Lloyd's Register
 Foundation
 W 479-0159

~~VERTICAL DONKEY~~ ² BOILERS. *Manufacturers of Steel Report on boiler attached.*

No. *Two.* Description *Scotch Type - Multitubular.*
 Made at *Glasgow* By whom made *A. & W. Dalglish* When made *1913.* Where fixed *In engine room.*
 Working pressure *100* tested by hydraulic pressure to *200lb.* Date of test *1* No. of Certificate *1* Fire grate area *None.* Description of Safety Valves *Spring loaded* No. of Safety Valves *2* Area of each *3.14* Pressure to which they are adjusted *105lb.* Date of adjustment *20.11.14.*
 If fitted with easing gear *Yes.* If steam from main boilers can enter the donkey boiler *No m.Bs.* 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 _____ Plates _____
 Working pressure of shell by rules _____ Thickness of shell crown plates _____ No. of stays to do. _____ Dia. of stays _____
 Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Thickness of furnace plates _____ Description of joint _____
 Working pressure of furnace by rules _____ Thickness of furnace crown plates _____ Radius of do. _____ Stayed by _____
 Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— *Two Connecting rod top end & 2 bottom end bolts & nuts, 2 main bearing bolts, 1 set. Coupling bolts, 1 set. of feed & bilge pump valves, 2 sets of piston rings, a quantity of assorted bolts & nuts, & iron of various sizes. See also other spare gear on attached list.*

The foregoing is a correct description,

Manufacturer.

[Signature]
 Managing Director.

Dates of Survey while building { During progress of work in shops - *1913 Sept 4 Oct 13-20 Dec 1-9-18-25 1914 Jan 7-15-16-20-22-23-26-30 Feb 4-10-12-18-25 Mar 12-17-26*
 During erection on board vessel - *Apr 1-20-21-22-23-27-29-30 May 5-14-22-27 June 1-4-5-8-9-12-16-17-24 July 1-3-10-13-14-15-27-29-30 Aug 5-12-17-24-26-27*
 Total No. of visits *88.* Is the approved plan of main boiler forwarded herewith *1 None.*

Dates of Examination of principal parts—Cylinders *27.5.14. valves 30.1.14. Slides 10.9.14. Covers 15.1.14. Pistons 5.5.14. Rods 25.12.13.*
 Connecting rods *25.12.13.* Crank shaft *22.7.14.* Thrust shaft *27.7.14.* Tunnel shafts ✓ Screw shaft *27.9.14.* Propeller *22.9.14.*
 Stern tube *17.3.14.* Steam pipes tested ✓ Engine and boiler seatings *17.9.14.* Engines holding down bolts *12.11.14.*
 Completion of pumping arrangements *12.10.14.* Boilers fixed *17.9.14.* Engines tried *under steam 10.12.14.*
 Main boiler safety valves adjusted *20.11.14* Thickness of adjusting washers *P. Boiler: P.W. = 1/32" S.W. = 3/8"*
 Material of Crank shaft *steel* Identification Mark on Do. *CHLP* Material of Thrust shaft *steel* Identification Mark on Do. *CHLP.*
 Material of Tunnel shafts ✓ Identification Marks on Do. ✓ Material of Screw shafts ✓ Identification Marks on Do. ✓
 Material of Steam Pipes ✓ Test pressure ✓

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

NOTE: Please see London letter dated 19.12.12. approving of original shafting, i.e. tunnel 11 7/8", thrust 12 1/2", tail 13 13/16", also see approved plan of crankshaft.
 The workmanship and materials are good. The machinery, motors and donkey boilers have been built under special survey, tested under full working conditions and found satisfactory. The machinery has also been tested for 2 1/2 hours with main air compressor cut out, and auxiliary compressor working with satisfactory results. Maximum & minimum revolutions during trials were 60 to 104.
 Work carried out in dry dock is given on attached repair form report.
 This is a duplicate of M/s Bandon
 This machinery is eligible in our opinion to be classed + LMC 12-14. oil engine + NE 12-14. + NDB 14-100 lb.

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

The amount of Entry Fee .. £ : :
 Special .. £ 36 : 4 :
 Donkey Boiler Fee .. £ : :
 Travelling Expenses (if any) £ : :
 When applied for, *19/12/14*
 When received, *29/1/15*
 22 DEC. 1914

Harry Clarke, John H Heck, & Al Pidditch
 Engineer Surveyors to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **GLASGOW**

Assigned + L.M.C. 12, 14
 + N.E. 12, 14
 Oil Engine
 Note shaft. ndb 14

