

# REPORT ON MACHINERY.

No. 34676

State of writing Report 19 When handed in at Local Office 19 Port of Glasgow THU. DEC. 24. 1914  
 Date, First Survey 4/9/13 Last Survey 17/12 19 14  
 (Number of Visits 8.8)

Co. in Survey held at Glasgow  
 Reg. Book. 101 on the ms "PANGAN."  
 Master Glasgow Built at Glasgow By whom built Barclay Curle & Co. Ltd.  
 Engines made at Glasgow By whom made Burmister & Wain Oil Eng. Co. when made 1914  
 Boilers made at to Main Boilers By whom made ✓ when made ✓

Registered Horse Power 324 Owners East Asiatic Co. Port belonging to Bangkok  
 Nom. Horse Power as per Section 29 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

GINES, &c.—Description of Engines Burmister & Wain Diesel System, 4 stroke cycle.  
 No. of Cylinders 6 No. of Cranks 6  
 Dia. of Cylinders 670 mm Length of Stroke 1000 mm Revs. per minute 85 Dia. of Screw shaft 13 1/2  
 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  
 ers are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 4'-8 3/4"

a. 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 screw 11 7/8 Pitch of Screw 9'-2" No. of Blades 4 State whether moveable no Total surface 53.5 sq. ft.  
 of Feed pumps 2 Independent Diameter of ditto 6" x 4" x 6" Stroke 7" x 5" x 8" Can one be overhauled while the other is at work yes  
 of Bilge pumps 5 Diameter of ditto See donkeys below Can one be overhauled while the other is at work yes  
 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" In Holds, &c. 2-3" in each hold.

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"  
 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  
 all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks Both valves & cocks  
 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  
 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  
 at pipes are carried through the bunkers none How are they protected ✓

all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times yes  
 the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges yes  
 es of examination of completion of fitting of Sea Connections and of Stern Tube and Screw shaft and Propeller 22. 4. 14

he Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Upper deck.

TERS, &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  
 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  
 least 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  
 of compensating ring No. and Description of Furnaces in each boiler Material Outside diameter  
 h of plain part top Thickness of plates crown Description of longitudinal joint No. of strengthening rings  
 bottom Thickness of plates bottom  
 Working pressure of furnace by the rules Combustion chamber plates: Material Thickness: Sides Back Top Bottom  
 h of stays to ditto: Sides Back Top If stays are fitted with nuts or riveted heads Working pressure by rules  
 erial of stays Diameter at smallest part Area supported by each stay Working pressure by rules End plates in steam space:  
 erial Thickness Pitch of stays How are stays secured Working pressure by rules Material of stays  
 meter at smallest part Area supported by each stay Working pressure by rules Material of Front plates at bottom  
 kness Material of Lower back plate Thickness Greatest pitch of stays Working pressure of plate by rules  
 eter of tubes Pitch of tubes Material of tube plates Thickness: Front Back Mean pitch of stays  
 h across wide water spaces Working pressures by rules Girders to Chamber tops: Material Depth and  
 kness 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  
 ately 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  
 fened 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



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

No. *Two.* Description *Scotch Type - Multitubular.*  
 Made at *Glasgow* By whom made *A. & W. Dalglisch* When made *1913.* Where fixed *In engine room.*  
 Working pressure *100* tested by hydraulic pressure to *200 lb.* 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 *105 lb.* 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  
 Working pressure of shell by rules Thickness of shell crown plates *See separate report on the donkey boiler attached.* 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 plates 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.

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 7-18-16-20-22-23-26-30 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 Mr's Bandon

This machinery is eligible in our opinion to be classed + LMC 12-14. oil engine + NE 12-14. + NDB 14-100 lb.

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*

Committee's Minute **GLASGOW**

Assigned + L.M.C. 12, 14

+ N.E. 12, 14

Note Shaft. ndb 14

Harry Clarke, John H Heck. *Eng. Surveyor to Lloyd's Register of British & Foreign Shipping.*



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