

REPORT ON MACHINERY.

No. 26478

Received at London Office THUR. 23 APL 1908

Survey Report
Date of Survey Report Apr 17th 1908 When handed in at Local Office Apr 18th 1908 Port of Glasgow
No. in Survey held at Glasgow Date, First Survey 12th Aug 1907 Last Survey April 15th 1908
Reg. Book. 99th on the Barcelona (Number of Visits 36)
Master Chas. Connell & Co Built at Glasgow By whom built David Rowan & Co (2480) when made 1908
Engines made at Glasgow By whom made David Rowan & Co when made 1908
Boilers made at do By whom made do when made 1908
Registered Horse Power 660 Owners Pimillos, Izquierdo & Co Port belonging to Cadiz
Nom. Horse Power as per Section 28 660 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Triple Expansion No. of Cylinders 3 No. of Cranks 3
Dia. of Cylinders 30. 50. 82 Length of Stroke 60 Revs. per minute 70 Dia. of Screw shaft 17 1/2 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 Yes If two liners are fitted, is the shaft lapped or protected between the liners Painted Length of stern bush 5' 10"
Dia. of Tunnel shaft 15 1/2 Dia. of Crank shaft journals 16 1/2 Dia. of Crank pin 16 1/2 Size of Crank webs 11 1/4 Dia. of thrust shaft under collars 17 Dia. of screw 18-0 Pitch of Screw 23-0 No. of Blades 4 State whether moceable No Total surface 120
No. of Feed pumps 2 Diameter of ditto 4 1/2 Stroke 30 Can one be overhauled while the other is at work Yes
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 3 Sizes of Pumps 9x13x10, 8x5x8, 5x3x5 No. and size of Suctions connected to both Bilge and Donkey pumps 2-3 1/2" each hold
In Engine Room 4-3 1/2" In Holds, &c. 2-3 1/2" each hold
No. of Bilge Injections 1 sizes 7" Connected to condenser, or to circulating pump Yes Is 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 Yes
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 For Suctions How are they protected Wood covering
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 8 of Stern Tube 8 Screw shaft and Propeller 14/3/08
Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Top grating
Is a Report also sent on the Hull of the ship? Yes James Dunlop & Co Ltd

BOILERS, &c.—(Letter for record (5)) Manufacturers of Steel
Total Heating Surface of Boilers 11470 Is Forced Draft fitted No No. and Description of Boilers 2 D & 1 S
Working Pressure 180 lb Tested by hydraulic pressure to 360 lb Date of test 28/1/08 No. of Certificate 9329
Can each boiler be worked separately Yes Area of fire grate in each boiler 21.138.56.69 No. and Description of Safety Valves to each boiler 2 Cochran Area of each valve 8.6.7 Pressure to which they are adjusted 185 lb Are they fitted with easing gear Yes
Smallest distance between boilers or uptakes and bunkers or woodwork 15" at 2nd Mean dia. of boilers 15-6" Length 12-0" Material of shell plates Steel
Thickness 1" Range of tensile strength 28-32. SE Are the shell plates welded or flanged No Descrip. of riveting: cir. seams D.R.L.
long. seams D.B.S. Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 9" SE Lap of plates or width of butt straps 19 1/2"
Per centages of strength of longitudinal joint 88.4, 89.4 Working pressure of shell by rules 180 lb Size of manhole in shell 17 x 13
Size of compensating ring 2-5 x 2-9 No. and Description of Furnaces in each boiler 6 1/2" Dugan Material Steel Outside diameter 4-2 3/16"
Length of plain part top 19 1/2" Thickness of plates bottom 3 1/2" Description of longitudinal joint weld No. of strengthening rings —
Working pressure of furnace by the rules 184 Combustion chamber plates: Material Steel Thickness: Sides 2 1/32" Back 7/8" Top 2 1/32" Bottom 3/4"
Pitch of stays to ditto: Sides 9 1/2 x 8 1/2" Back 8 1/2 x 8" Top 9 1/2 x 8 1/2" If stays are fitted with nuts or riveted heads Yes Working pressure by rules 184
Material of stays Steel Diameter at smallest part 1 1/4" Area supported by each stay 68" Working pressure by rules 182 End plates in steam space: Material Steel Thickness 1 1/32" Pitch of stays 19 1/4 x 22" How are stays secured D. R. L. Working pressure by rules 180 Material of Front plates at bottom Steel
Diameter at smallest part 7.69" Area supported by each stay 435" Working pressure by rules 180 Material of Front plates at bottom Steel
Thickness 7/8" Material of Lower back plate Steel Thickness 1 3/16" Greatest pitch of stays 13 3/4" Working pressure of plate by rules 181
Diameter of tubes 3 1/4" Pitch of tubes 4 1/2 x 4 3/8" Material of tube plates Steel Thickness: Front 3 1/32" Back 13/16" Mean pitch of stays 11 1/8"
Pitch across wide water spaces 13 1/2" Working pressures by rules 165 Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9 1/2 x 3 x 12 SE Length as per rule 40 1/2 DE Distance apart 9 3/4" Number and pitch of stays in each 4-8 DE
Working pressure by rules 180 Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked separately Yes
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 —

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

Is a Report also sent on the Hull of the ship?

1m.17-F.

Lloyd's Register Foundation

Multitubular Cylindrical

VERTICAL DONKEY BOILER—Manufacturers of Steel

No. _____ Description *In Rpt. 5a*
 Made at *Glasgow* By whom made *David Rowan & Co* When made *1908* Where fixed *Stokehold*
 Working pressure _____ tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____ Fire grate area _____ Description of Safety
 Valves _____ No. of Safety Valves _____ Area of each _____ Pressure to which they are adjusted _____ Date of adjustment _____
 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 _____ Plates _____
 Working pressure of shell by rules _____ 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 _____
 Working pressure of furnace by rules _____ Thickness of furnace crown plates _____ Stayed by _____
 Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— *Propeller shaft, propeller, 1/2 crank shaft, air pump rod, air pump rod, top end brasses, bottom end brasses, eccentric complete 1HP cylinder cover, 40 condenser tubes, 50 boiler tubes, etc, & the bolts & nuts required by the Rules.*

The foregoing is a correct description,

Manufacturer.

David Rowan & Co

Dates of Survey while building { During progress of work in shops— 1907 Aug. 12, 16, 20, 24, 29 Sept. 5, 18, 25 Oct. 11, 15, 29 Nov. 4, 12, 15 Dec. 2, 5, 9, 12, 19 1908.
 { During erection on board vessel— Jan. 15, 27 Feb. 10, 21 Mar. 4, 6, 13, 14, 21, 23, 26, 31 April 2, 4, 8, 9, 15
 Total No. of visits 36

Is the approved plan of main boiler forwarded herewith *damas*
 " " " donkey " " " *St. Cadiz*

Dates of Examination of principal parts—Cylinders *2/12/07* Slides *2/12/07* Covers *5/12/07* Pistons *5/12/07* Rods *15/1/08*
 Connecting rods *15/1/08* Crank shaft *21/2/08* Thrust shaft *21/2/08* Tunnel shafts *21/2/08* Screw shaft *15/1/08* Propeller *15/1/08*
 Stern tube *15/1/08* Steam pipes tested *31/3/08* Engine and boiler seatings *21/3/08* Engines holding down bolts *9/4/08*
 Completion of pumping arrangements *9/4/08* Boilers fixed *9/4/08* Engines tried under steam *15/4/08*
 Main boiler safety valves adjusted *9/4/08* Thickness of adjusting washers *SDE 1/2 7/16, 228 3/8, 17 7/16, 56. The 1st 1/2*
 Material of Crank shaft *steel* Identification Mark on Do. *H.G. 5* Material of Thrust shaft *steel* Identification Mark on Do. *H.G. 5*
 Material of Tunnel shafts *steel* Identification Marks on Do. _____ Material of Screw shafts *steel* Identification Marks on Do. _____
 Material of Steam Pipes *Iron & copper* Test pressure *540 lb 360 lb.*

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

These engines & boilers have been constructed under Special Survey & are of good materials & workmanship. They have been securely fitted on board & satisfactorily tried under steam.

*This vessel is in my opinion eligible to have notation **L.M.C. 4.08** in the Register Book.*

It is submitted that

this vessel is eligible for

THE RECORD **L.M.C. 4.08.**

ELEC LIGHT.

24.4.08

The amount of Entry Fee *£3* : : When applied for, *17/4/1908*
 Special *£53* : :
 Donkey Boiler Fee : : When received, *7.5.5*
 Travelling Expenses (if any) : : *22/4/1908*

H. Gardner-Smith
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

22 APR 1908

Assigned *+ L.M.C. 4.08*

MAILED
 WRITTEN



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Lloyd's Register Foundation

Glasgow

Certificate (if required) to be sent to

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