

REPORT ON MACHINERY.

No. 39259.

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Date of writing Report 21st Oct 1919 When handed in at Local Office 27/10/19 Port of Glasgow

To, in Survey held at Glasgow Date, First Survey 14/10/18 Last Survey 16th Oct 1919
Reg. Book. on the S.S. "Harmodius" (Number of Visits 48)

Master Built at Irvine By whom built Ayrshire Dockyard No 476 Tons Gross 5229 Net 3179 When built 1919

Engines made at Glasgow By whom made Dunsmuir & Jackson No 496 when made 1919
Boilers made at Glasgow By whom made Dunsmuir & Jackson No 495 when made 1919

Registered Horse Power Owners R. J. Houston & Co Port belonging to Liverpool
Nom. Horse Power as per Section 28 517 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 27" x 44" x 73" Length of Stroke 48" Revs. per minute 75 Dia. of Screw shaft as per rule 14.7 as fitted 15.2 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 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 Yes Length of stern bush 60 1/2"

Dia. of Tunnel shaft as per rule 13.3 as fitted 13.2 Dia. of Crank shaft journals as per rule 13.9 as fitted 14.2 Dia. of Crank pin 14.2 Size of Crank webs 28 x 9 Dia. of thrust shaft under rollers 14 3/4 Dia. of screw 17-6 Pitch of Screw 18-6 No. of Blades 4 State whether moveable No Total surface 102 sq ft

No. of Feed pumps 2 Diameter of ditto 4 Stroke 24 Can one be overhauled while the other is at work Yes
No. of Bilge pumps 2 Diameter of ditto 4 Stroke 24 Can one be overhauled while the other is at work Yes
No. of Donkey Engines 5 Sizes of Pumps 3 Weirs 9 1/2 x 7 x 18: 1 condenser 10 1/2 x 14 x 24: 6 x 7 x 7 No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room 2 @ 3 1/2: Strokehold 2 @ 3 1/2 In Holds, &c. No 1-2 @ 3 1/2: No 2-2 @ 3 1/2: Cross Bunker @ 3 1/2: No 4 hold 2 @ 3 1/2: No 5 hold 1 @ 3 1/2: Tunnel well 1 @ 3 1/2

No. of Bilge Injections 1 sizes 12" Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size Yes 1 @ 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 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
That pipes are carried through the bunkers Forward 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

Dates of examination of completion of fitting of Sea Connections 10-6-19 of Stern Tube 26-6-19 Screw shaft and Propeller 12-9-19
Is the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Top platform

MILERS, &c.—(Letter for record S) Manufacturers of Steel W. Beardmore & Co.

Total Heating Surface of Boilers 7668 Is Forced Draft fitted Yes No. and Description of Boilers Three Cyl. S.S. Multitubular
Working Pressure 180 lbs Tested by hydraulic pressure to 360 lbs Date of test 29-1-19 No. of Certificate 15600

Can each boiler be worked separately Yes Area of fire grate in each boiler 68.3 sq ft No. and Description of Safety Valves to each boiler Two spring loaded Area of each valve 9.62 sq in Pressure to which they are adjusted 185 lbs Are they fitted with easing gear Yes
Smallest distance between boilers or uptakes and bunkers or woodwork 18" dia. of boilers 15-6" Length 11-6" Material of shell plates S
Thickness 1 1/4" Range of tensile strength 28/32 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams L.D.R.
Type of seams T.R. & All Straps Diameter of rivet holes in long. seams 1 5/16" Pitch of rivets 9 1/8" Length of plates or width of butt straps 19 1/2"

Percentages of strength of longitudinal joint rivets 88.3 plate 85.6 Working pressure of shell by rules 182 Size of manhole in END PLATE 16 x 12
Type of compensating ring Flanged No. and Description of Furnaces in each boiler 3 Corrugated Material S Outside diameter 50 3/16"
Length of plain part top 7 19/32 Thickness of plates crown 7 19/32 Description of longitudinal joint Weld No. of strengthening rings None
Working pressure of furnace by the rules 187 Combustion chamber plates: Material S Thickness: Sides 23/32 Back 1 1/8" Top 23/32 Bottom 23/32

Number of stays to ditto: Sides 10 5/8 x 9 1/4 Back 10 1/4 x 8 3/4 Top 10 5/8 x 9 1/4 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 180
Material of stays S Area at smallest part 2309 Area supported by each stay 99 Working pressure by rules 210 End plates in steam space: Material S Thickness 1 1/32 Pitch of stays 21 3/4 x 20 1/2 How are stays secured D. nuts Working pressure by rules 181 Material of stays S
Area at smallest part 829 Area supported by each stay 470 Working pressure by rules 183 Material of Front plates at bottom S
Thickness 7/8" Material of Lower back plate S Thickness 27/32 Greatest pitch of stays 13 3/4 Working pressure of plate by rules 205

Diameter of tubes 2 3/4" Pitch of tubes 4 x 3 7/8" Material of tube plates S Thickness: Front 2 1/32 Back 3/4 Mean pitch of stays 9 7/8
Pitch across wide water spaces 13 5/8 Working pressures by rules 182 Girders to Chamber tops: Material S Depth and thickness of girder at centre 10 x 1 3/4 Length as per rule 35 9/16 Distance apart 10 5/8 Number and pitch of stays in each 3 @ 9 1/4
Working pressure by rules 183 Superheater or Steam chest; how connected to boiler 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 rivets

Boilers 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

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VERTICAL DONKEY BOILER— Manufacturers of Steel

No.	Description		When made	Where fixed
Made at	By whom made		When made	Where fixed
Working pressure	tested by hydraulic pressure to	Date of test	No. of Certificate	Fire grate area
Valves	No. of Safety Valves	Area of each	Pressure to which they are adjusted	Date of adjustment
If fitted with casing 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
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	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:— 2 each of top & bottom end, main bearing & coupling bolts & nuts: 1 set each of feed, bilge & air pump valves: 2 rings for each piston rod packing: 1 C.I. Propeller: 3 main & 3 donkey feed check valves, 6 cylinder cover studs & nuts: 12 boiler tubes, 12 condenser tubes, 6 steam chest cover studs, 2 rings for each valve spindle packing, assorted iron bars, bolts & nuts.

The foregoing is a correct description,

James Jackson Manufacturer.

Dates of Survey while building	During progress of work in shops ---	Boilers H95	1918	Oct 14, 24, Nov 14, 19, 22, 27	Dec 5, 11, 16, 26	1919	Jan 29
	During erection on board vessel ---	Engines H96	1919	Apr 29, May 5, 6, 13, 16, 20, 22, 26, 30	June 4, 5, 9, 10, 12, 17, 23, 24, 26, 27	July 3, 7	
	Total No. of visits	H8		Aug 14, 20, 26, 28, Sept 2, 8, 12, 14, 20, 23, Oct 2, 10, 14, 16			

Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts	Cylinders	12-6-19	Slides	23-6-19	Covers	23-6-19	Pistons	30-5-19	Rods	17-6-19
	Connecting rods	23-6-19	Crank shaft	30-5-19	Thrust shaft	30-5-19	Tunnel shafts	9-6-19	Screw shaft	17-6-19
	Stern tube	12-6-19	Steam pipes tested	3-7-19	Engine and boiler seatings	10-6-19	Engines holding down bolts	26-8-19		
	Completion of pumping arrangements	16-10-19	Boilers fixed	18-9-19	Engines tried under steam	16-10-19				
	Main boiler safety valves adjusted	18-9-19	Thickness of adjusting washers	S. P 3/8", S 3/8", C P 3/8", S 25/32", P. P 3/8", 1/2"						
	Material of Crank shaft	S	Identification Mark on Do.	30-5-19, J.E.S.	Material of Thrust shaft	S	Identification Mark on Do.	30-5-19, J.E.S.		
	Material of Tunnel shafts	S	Identification Marks on Do.	9-6-19, J.E.S.	Material of Screw shafts	S	Identification Marks on Do.	17-6-19, J.E.S.		
	Material of Steam Pipes	Seamless Steel	Test pressure	540 lbs						

General Remarks (State quality of workmanship, opinions as to class, &c. Duplicate of Lane Builders tags No 501 = S.P. Berwick. Glasgow Report No 39089.)
 These Engines and Boilers have been built under Special Survey and in accordance with the Rules: the materials and workmanship are sound and good. They have been fitted on board in an efficient manner, tried under working conditions and found satisfactory, and are eligible in my opinion to be classed with record of L.M.C. 10-19.

It is submitted that this vessel is eligible for THE RECORD + LMC 10.19. FD.

J.W.D.
7/11/19
J.P.R.

The amount of Entry Fee	£ 3 : 0	When applied for.	4/11/19
Special Charge	£ 45 : 17	When received.	12/11/19
Donkey Boiler Fee	£ 17 : 0		
Travelling Expenses (if any)	£ :		

Committee's Minute **GLASGOW** 4 NOV 1919
 Assigned + LMC 10,19

Certificate (if required) to be sent to Glasgow

