

REPORT ON MACHINERY.

No. 30357

Date of writing Report July 1st 1911 When handed in at Local Office 4/7/11 Port of Glasgow
 No. in Survey held at Clydebank Date, First Survey 20th April/10 Last Survey 6 July 1911
 Book. 100 on the Stul Twin Is Argyllshire (Number of Visits)

Master W. Chicken Built at Clydebank By whom built J. Brown & Co Ltd Tons { Gross 10392
 Net 6610
 Engines made at Clydebank By whom made do when made 1911
 Boilers made at do By whom made do when made 1911

Registered Horse Power _____ Owners Turnbull Martin & Co Port belonging to Glasgow
 Nom. Horse Power as per Section 28 1264 Is Refrigerating Machinery fitted for cargo purposes yes Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Twin screw quadruple expansion No. of Cylinders 8 No. of Cranks 4 each
 Dia. of Cylinders 25-35 1/2-51-72 Length of Stroke 51 Revs. per minute 77 Dia. of Screw shaft 15 1/2 Material of stul
 as fitted 16 1/2 screw shaft

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 yes fit tightly If two
 liners are fitted, is the shaft lapped or protected between the liners _____ Length of stern bush 4'-6"

Dia. of Tunnel shaft 13 1/2 as per rule 14 1/2 Dia. of Crank shaft journals 14 1/2 as per rule 14 1/2 Dia. of Crank pin 14 1/2 Size of Crank webs 29 1/2 x 10 1/2 Dia. of thrust shaft under
 collars 14 1/2 Dia. of screw 17-9" Pitch of Screw 20-0" No. of Blades 4 State whether moveable yes Total surface 90 sq

No. of Feed pumps 2 Diameter of ditto 4 1/2" Stroke 25 1/2" Can one be overhauled while the other is at work yes
 No. of Bilge pumps 2 Diameter of ditto 5" Stroke 25 1/2" Can one be overhauled while the other is at work yes

No. of Donkey Engines 6 Sizes of Pumps 1 1/2 x 18, 1 1/2 x 15, 1 1/2 x 12, 1 1/2 x 10, 1 1/2 x 8, 1 1/2 x 6 No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 3 of 3 1/2" Stakehold 2 of 3 1/2" In Holds, &c. No 1 Hold 2 of 3 1/2" No 2 Hold 2 of 3 1/2" No 3 Hold
2 of 3 1/2" No 4 Hold 2 of 3 1/2" No 5 Hold 2 of 3 1/2" No 6 Hold 2 of 3 1/2" Tunnel Well 1 of 3 1/2"

No. of Bilge Injections 12 sizes 1/2" Connected to condenser, or to circulating pump each pp 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 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 stakehold plates yes Are the Discharge Pipes above or below the deep water line both

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 bilge & ballast 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 24.2.11 of Stern Tubes 24.2.11 Screw shafts and Propellers 24.2.11
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from upper main deck

BOILERS, &c.—(Letter for record 5) Manufacturers of Steel Steel Co of Scotland
 Total Heating Surface of Boilers 19432 sq ft Is Forced Draft fitted yes No. and Description of Boilers Two single ended
 Working Pressure 215 lbs Tested by hydraulic pressure to 430 lbs Date of test 12.10.10 No. of Certificate 10620

Can each boiler be worked separately yes Area of fire grate in each boiler 78.8 sq No. and Description of Safety Valves to
 each boiler 2 spring loaded Area of each valve 8.29 sq Pressure to which they are adjusted 215 lbs Are they fitted with casing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 15" Mean dia. of boilers 14'-0" Length 11'-6" Material of shell plates stul
 Thickness 1 3/4" Range of tensile strength 30 1/2/34 1/2 tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams Lap, DR & TR

long. seams DR, TR Diameter of rivet holes in long. seams 1 3/4" Pitch of rivets 10 1/2" Lap of plates or width of butt straps 24 1/2"
 Per centages of strength of longitudinal joint rivets 94.1 Working pressure of shell by rules 233 Size of manhole in shell 22" x 18"

Size of compensating ring 3'-6 1/2" x 2'-11" No. and Description of Furnaces in each boiler 4 Brighton Material stul Outside diameter 46 5/8"
 Length of plain part top 11" Thickness of plates bottom 11" Description of longitudinal joint welded No. of strengthening rings _____

Working pressure of furnace by the rules 243 Combustion chamber plates: Material stul Thickness: Sides 5/8" Back 3/4" Top 5/8" Bottom 15/16"
 Pitch of stays to ditto: Sides 7 1/2" x 7 1/2" Back 7 1/2" x 7 1/2" Top 7 1/2" x 7 1/2" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 217

Material of stays stul Diameter at smallest part 1.48" Area supported by each stay 62 sq Working pressure by rules 215 End plates in steam space:
 Material stul Thickness 1 5/16" Pitch of stays 16 1/2" x 16 3/8" How are stays secured DN Working pressure by rules 221 Material of stays stul

Diameter at smallest part 3 3/16" Area supported by each stay 270 sq Working pressure by rules 306 Material of Front plates at bottom stul
 Thickness 1 5/16" Material of Lower back plate stul Thickness 1" Greatest pitch of stays 14 1/2" Working pressure of plate by rules 262

Diameter of tubes 2 1/2" Pitch of tubes 3 3/4" x 3 3/4" Material of tube plates stul Thickness: Front 13/16" Back 7/8" Mean pitch of stays 9 3/8"
 Pitch across wide water spaces 1 3/2" doubled Working pressures by rules 292 Girders to Chamber tops: Material stul Depth and
 thickness of girder at centre 2 plates 8 1/2" x 3/4" Length as per rule 30 1/2" Distance apart 7 1/2" Number and pitch of stays in each 3 of 7 1/2"

Working pressure by rules 220 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 casing gear _____

9.16.27.30
 2.3.7.14
 22.29

88

MS14-0228

VERTICAL DONKEY BOILER— Manufacturers of Steel

No.	Description			
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 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
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 Connecting rod top end bolts & nuts, 2 Connecting rod bottom end bolts & nuts, 2 main bearing bolts, 1 set of coupling bolts, 1 set of feed & bilge pump valves, 1 set of piston springs, a quantity of assorted bolts & nuts, and iron of various sizes. Tail shaft, thrust shaft, Crank shaft & other gear.

John Brown & Company, Limited.
The foregoing is a correct description,
J. Henderson Manufacturer.

Dates of Survey while building	During progress of work in shops	1910. Apr. 20. May 26. June 1. 7. 21. 22. 29. July 4. 12. 27. Aug 11. 16. 24. Sep 5. 12. 21. 28. 29. Oct 4. 6. 12. 18. 19.
	During erection on board vessel	25. Nov 2. 9. 15. 18. 21. 24. Dec 1. 5. 6. 16. 20. 1911. Jan 6. 12. 16. 20. Feb 1. 7. 10. 15. 16. 22. 24. 28.
	Total No. of visits	Mar 1. 7. 8. 10. 11. 15. 17. 20. 23. 29. 31. April 3. 4. 10. 12. 18. 24. 28. May 4. 11. 17. 22. 30. June 7. 9. 14. 19. 20. 26. 27. 28. 29. 30. July 6. 81.

Dates of Examination of principal parts	Cylinders 16-8-10 to 21-9-10	Slides 29-9-10	Covers 21-9-10	Pistons 21-9-10	Rods 9-11-10
Connecting rods	18-10-10	Crank shaft 29-9-10	Thrust shaft 29-9-10	Tunnel shafts 29-9-10 to 12-1-11	Screw shaft 29-9-10
Stern tube	29-9-10	Steam pipes tested 22-2-11 to 4-5-11	Engine and boiler seatings 24-2-11	Engines holding down bolts 31-3-11	
Completion of pumping arrangements	28-4-11	Boilers fixed 4-4-11	Engines tried under steam 30-6-11		
Main boiler safety valves adjusted	28-4-11	Thickness of adjusting washers	FSEB. PV 3/8. SV 5/32. ASEB. PV 5/16. SV 7/32. PDEB. FV 3/8. CV 9/32. AV 5/16. SDEB. FV 3/8. CV 5/16. AV 13/32.		
Material of Crank shaft	steel	Identification Mark on Do.	399	Material of Thrust shaft	steel
Material of Tunnel shafts	steel	Identification Marks on Do.	399	Material of Screw shafts	steel
Material of Steam Pipes	steel	Test pressure	645 lbs.		

General Remarks (State quality of workmanship, opinions as to class, &c. *The materials & workmanship are good. The machinery of this vessel has been constructed under special survey in accordance with the rules and approved plans and has been seen working satisfactorily under steam. This machinery is eligible in our opinion for classification and to have the record + L.M.C. 7.11.*

It is submitted that this vessel is eligible for THE RECORD + L.M.C. 7.11. 2 DB & 2 SB. F.D.

J.W.D. 4/7/11 H.P.R.

The amount of Entry Fee	£ 3 - -	When applied for,	3/7/11
Special	76 : 12	When received,	7-7-11
Donkey Boiler Fee			
Travelling Expenses (if any)	£		

Harry Clarke
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute
Assigned + L.M.C. 7-11



Glasgow

Certificate (if required) to be sent to

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