

REPORT ON MACHINERY.

No. 83108.

Date of writing Report 19 When handed in at Local Office 8 DEC 1921 Port of LIVERPOOL
 No. in Survey held at Liverpool & Sarston Date, First Survey 21st Feb. 1921 Last Survey 7th Dec 1921
 Reg. Book. on the Steel Twin Fair & left S/S. Churston (Number of Visits 82)
 Master Built at Sarston By whom built H. & C. Sragson & Co. Tons Gross 724 Net 254
 Engines made at Liverpool By whom made D. Rollo & Sons Ltd. When built 1921-12
 Boilers made at do By whom made do when made 1921-12
 Registered Horse Power 253. Owners Municipal Corporation of Birkenhead belonging to Liverpool
 Nom. Horse Power as per Section 28 253. Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted yes.

ENGINES, &c.—Description of Engines Twin Screw Triple Expansion No. of Cylinders 3 each No. of Cranks 3 each
 Dia. of Cylinders $17\frac{3}{4} \times 27\frac{1}{2} \times 45\frac{1}{4}$ Length of Stroke 24" Revs. per minute 135" Dia. of Screw shaft as per rule $8\frac{1}{2}$ " Material of screw shaft steel
 Is the screw shaft fitted with a continuous liner the whole length of the stern tube no. Fair Shaft Is the after end of the liner made water tight in the propeller boss 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 If two liners are fitted, is the shaft lapped or protected between the liners Length of stern bush 3' 0"

Dia. of Tunnel shaft as per rule 7.95" as fitted 8.32" Dia. of Crank shaft journals as per rule 8.34" as fitted 8.5" Dia. of Crank pin 8.5" Size of Crank webs $5\frac{1}{2} \times 10$ " Dia. of thrust shaft under collars 8.5" Dia. of screws 7.6" Pitch of Screw 10" 6" No. of Blades 3 State whether moveable Solid Total surface 31 sq ft each
 No. of Feed pumps 2. Diameter of ditto 4" 6" Stroke 8" Can one be overhauled while the other is at work yes
 No. of Bilge pumps 2. Diameter of ditto 4" Stroke 4" 1/2" Can one be overhauled while the other is at work yes
 No. of Donkey Engines one Sizes of Pumps 4" x 1" x 8" No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Three 3" Suctions In Holds, &c. Twelve 2" Suctions

No. of Bilge Injections one sizes 6" Connected to condenser, or to circulating pump etc. 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
 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 none. 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.
 Is the Screw Shaft watertight yes Is it fitted with a watertight door yes worked from Main deck.

BOILERS, &c.—(Letter for record S.) Manufacturers of Steel John Spencer & Sons Newcastle Steel Works.

Total Heating Surface of Boilers 4428 Is Forced Draft fitted no. No. and Description of Boilers Two Locomotive Type Cylindrical
 Working Pressure 180 lbs Tested by hydraulic pressure to 320 lbs Date of test 26 Oct 1921 No. of Certificates 2200 & 2201

Can each boiler be worked separately yes. Area of fire grate in each boiler 63 sq ft. No. and Description of Safety Valves to each boiler Two Spring Loaded Area of each valve 8.28" 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 4 feet Mean dia. of boilers 10" 9" Length 17' 1" Material of shell plates Steel
 Thickness $\frac{15}{16}$ " Range of tensile strength 28/32 tons Are the shell plates welded or flanged no. Descrip. of riveting: cir. seams D. & S. rivet
 long. seams L. & H. Rivet Diameter of rivet holes in long. seams 1" Pitch of rivets $7\frac{1}{2}$ 93/32 Lap of plates or width of butt straps 1' 2 1/16"

Per centages of strength of longitudinal joint rivets 91.34% plate 85.84% Working pressure of shell by rules 187.44 lbs Size of manhole in shell 16" x 12"
 Size of compensating ring $7\frac{1}{2} \times \frac{15}{16}$ " No. and Description of Furnaces in each boiler 3 Corrugated Material Steel Outside diameter 3' 10 1/4"

Length of plain part top corrugated Thickness of plates crown 7/16" bottom 7/16" Description of longitudinal joint Welded No. of strengthening rings
 Working pressure of furnace by the rules 189 lbs Combustion chamber plates: Material Steel Thickness: Sides 19" 32" Back 1 1/16" Top 19" 32" Bottom 19" 32"

Pitch of stays to ditto: Sides $7\frac{3}{4} \times 8\frac{1}{4}$ Back $7\frac{3}{4} \times 8\frac{1}{4}$ Top $7\frac{3}{4} \times 8\frac{1}{4}$ If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 189 lbs
 Material of stays Steel Area at smallest part 1.449" Area supported by each stay 63.9" Working pressure by rules 196 lbs End plates in steam space:

Material Steel Thickness $\frac{3}{32}$ " Pitch of stays $16\frac{1}{2} \times 15\frac{1}{2}$ How are stays secured Nuts & Washers Working pressure by rules 180 lbs Material of stays Steel
 Area at smallest part 5.04" Area supported by each stay 251.3" Working pressure by rules 219 lbs Material of Front plates at bottom Steel

Thickness 1" Material of Lower back plate Steel Thickness $\frac{3}{32}$ " Greatest pitch of stays as per plan Working pressure of plate by rules 180 lbs
 Diameter of tubes $3\frac{3}{4}$ " Pitch of tubes $4\frac{3}{8} \times 4\frac{3}{8}$ Material of tube plates Steel Thickness: Front $\frac{3}{32}$ 31/32 Back 1/16" Mean pitch of stays 8 3/4"

Pitch across wide water spaces 14 1/4" Working pressures by rules 210 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre Two 8" x 3/4" Length as per rule 2' 7" Distance apart 8 1/4" Number and pitch of stays in each Aux 7 3/4"

Working pressure by rules 190 lbs Steam dome: description of joint to shell % of strength of joint
 Diameter Thickness of shell plates Material Description of longitudinal joint Diam. of rivet holes
 Pitch of rivets Working pressure of shell by rules Crown plates Thickness How stayed

SUPERHEATER. Type Date of Approval of Plan Tested by Hydraulic Pressure to
 Date of Test Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler
 Diameter of Safety Valve Pressure to which each is adjusted Is Easing Gear fitted

IS A DONKEY BOILER FITTED?

No.

If so, is a report now forwarded?

SPARE GEAR. State the articles supplied: Two Spare Propellers. 2 propeller Shafts & nuts. 2 Stern
Bushes complete. 12 coupling bolts & nuts. 4 bolts & nuts for connecting rods. 2 Main
bearing bolts & nuts. 12 bolts & nuts for pistons. 1 eccentric & strap complete. 2 pairs
of connecting rod brasses. 2 sets of valves for Air Pump. 50 condenser tubes and 100
females. 20 boiler tubes and ten stoppers. 6 stay tubes and nuts. 1 complete set of
fire bars. 1 set each of patent packing for M.P. & M.P. Piston Rods & Valve Spindles.

The foregoing is a correct description,

For and on behalf of

DAVID ROLLO & SONS, LTD.

Manufacturer.

Dates of Survey while building
During progress of work in shops - 1921. Feb. 21. 25. 28. Mar. 4. 11. 14. April 4. 5. 6. 8. 11. 13. 14. 15. 18. 21. 27. 28. May. 2. 5. 6. 9. 11. 14. 27. 30. June. 3. 6. 17. 24.
During erection on board vessel - 29. 30. July. 1. 6. 12. 14. 15. 19. 20. 26. 29. Aug. 3. 4. 9. 10. 11. 16. 19. 20. 24. Sept. 1. 5. 13. 15. 19. 21. 26. 27. Oct. 3. 4. 7. 8. 10. 11.
Total No. of visits 82.
Is the approved plan of main boiler forwarded herewith yes.

Dates of Examination of principal parts - Cylinders 21-2-21, 5-5-21 Slides 21/2/21, 5/7/21 Covers 24/4/21, 11/5/21 Pistons 5/7/21. Rods 21/2/21, 20/7/21.
Connecting rods 4/3/21, 20/7/21 Crank shaft 4/3/21, 15/9/21 Thrust shaft 17/6/21, 12/10/21 Tunnel shafts 17/6/21, 12/10/21 Screw shaft 15/9/21, 12/10/21 Propeller 10/6/21, 24/10/21.
Stern tube 20/7/21, 12/10/21 Steam pipes tested 7/10/21, 15/11/21 Engine and boiler seatings 24/10/21 Engines holding down bolts 23/11/21.
Completion of pumping arrangements 23/11/21. Boilers fixed 23/11/21 Engines tried under steam 20/11/21.
Completion of fitting sea connections 24/10/21 Stern tube 24/10/21. Screw shafts and propellers 24/10/21.
Main boiler safety valves adjusted 25/11/21. Thickness of adjusting washers S. 2. P. 7/16 S. 15/32 P. 1/2".
Material of Crank shaft Steel Identification Mark on Do. 5813. n. n. c. Material of Thrust shaft Steel 5975. n. n. c. Identification Mark on Do. 5975. n. n. c.
Material of Tunnel shafts Steel Identification Marks on Do. 5975. n. n. c. Material of Screw shafts Steel Identification Marks on Do. 5976. n. n. c.
Material of Steam Pipes Copper Test pressure 360 lbs.

Is an installation fitted for burning oil fuel No. Is the flash point of the oil to be used over 150°F. ✓

Have the requirements of Section 49 of the Rules been complied with ✓

Is this machinery duplicate of a previous case yes. If so, state name of vessel

S/S. "BARNSTON"

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

The Machinery of this Vessel has now been built under Special
Survey and in accordance with the approved plans and Secretary's
Letter C. B. 15th 1920, & Dec 23rd 1920, and Feb 15th 1921 & 4th 1922nd March 1921
The Materials and Workmanship are of good quality, and when
tried under full Working Conditions at sea were found satisfactory
in every respect, and is now eligible in our opinion for the
Notification & L.M.C. 12-21.

It is submitted that
this vessel is eligible for
THE RECORD.

L.M.C. - 12. 21.

Twin Screw. 2 screws for a & 2 aft.

MACHINERY CERT.
WRITTEN.

Ans. L.Y.
20/12/21.

The amount of Entry Fee ... £ 4 : 0 ✓

Special ... £ 62 : 19 ✓

Donkey Boiler Fee ... £ : : ✓

Travelling Expenses (if any) £ : : ✓

When applied for.

16 DEC 1921

When received.

28-1-22

John Dykes & B. G. Oxford
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

LIVERPOOL.

16 DEC 1921

Assigned

L No 4 12: 21.

When fee is paid



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Lloyd's Register
Foundation