

REPORT ON MACHINERY.

No. 40673

Received at _____ Office

DEC. 15 1920

Date of writing Report 11.12.1920 When handed in at Local Office 11.12.1920 Port of Glasgow

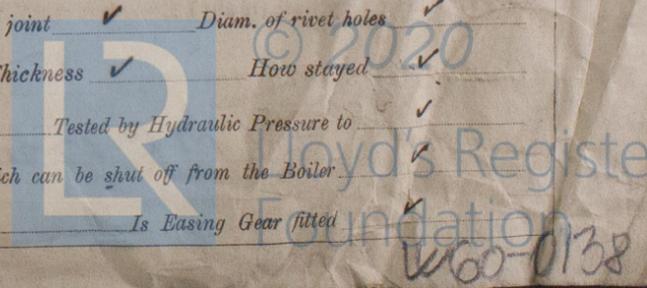
No. in Survey held at Glasgow Date, First Survey 18th June 1915 Last Survey 6th Dec 1920
Reg. Book. T.S.S. "NATIA" (Number of Visits 82)

Master J.L.P. Mathews Built at Glasgow By whom built A. Stephen & Sons. 11/10/1919 Tons Gross 8723 Net 5427
Engines made at Glasgow By whom made A. Stephen & Sons. 11/10/1919 When built 1920
Boilers made at Glasgow By whom made A. Stephen & Sons. 11/10/1919 when made 1920
Registered Horse Power Owners Royal Mail Port belonging to Southampton
Nom. Horse Power as per Section 28 1095 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 4 No. of Cranks 4
Dia. of Cylinders 23" x 33" x 47" x 67" Length of Stroke 51" Revs. per minute 93 Dia. of Screw shaft as per rule 14.3 Material of screw shaft as fitted 14.78
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 ✓ If two liners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 66"
Dia. of Tunnel shaft as per rule 13.4 Dia. of Crank shaft journals as per rule 14.07 Dia. of Crank pin 14" Size of Crank webs 19 1/2" x 8 1/4" Dia. of thrust shaft under collars 14" Dia. of screw 16-6" Pitch of Screw 18-0" No. of Blades 3 State whether moceable Yes Total surface 80 sq ft
No. of Feed pumps 6 diameters Diameter of ditto 10 1/2" Stroke 26" Can one be overhauled while the other is at work Yes
No. of Bilge pumps 2 Diameter of ditto 5" Stroke 24" Can one be overhauled while the other is at work Yes
No. of Donkey Engines 3 Sizes of Pumps 1 @ 10" x 10" 1 @ 10" x 7" x 10" 1 @ 10" x 6" x 10" No. and size of Suctions connected to both Bilge and Donkey pumps
In Engine Room 2 @ 3 1/2" Stokehold 2 @ 3 1/2" Tunnel 2 @ 3 1/2" In Holds, &c. No 1 - 2 @ 3 1/2" No 2 - 2 @ 3 1/2" No 3 - 2 @ 3 1/2" No 4 - 2 @ 3 1/2" No 5 - 2 @ 3 1/2"
No. of Bilge Injections 2 sizes 8" Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size 2 @ 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 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 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 Tunnel watertight Yes Is it fitted with a watertight door Yes worked from above Deep load line

BOILERS, &c.—(Letter for record 5) Manufacturers of Steel D. Colville & Sons: Glasgow S. & J. Co. S.C. of Scotland
Total Heating Surface of Boilers 16812.5 Is Forced Draft fitted Yes No. and Description of Boilers 5 Single ended multitubular
Working Pressure 215 lbs Tested by hydraulic pressure to 430 lbs Date of test 11-29-12-19 No. of Certificate 15133: 2 @ 15114-6 2 @ 15070
Can each boiler be worked separately Yes Area of fire grate in each boiler 82.5 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 215 lbs Are they fitted with easing gear Yes
Smallest distance between boilers or uptakes and bunkers on woodwork 24" dia. of boilers 17-6" Length 12-0" Material of shell plates S
Thickness 1 2/32" Range of tensile strength 30/34 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams L.D.R. long. seams T.R. Old Seams Diameter of rivet holes in long. seams 1 2/32" Pitch of rivets 10 1/2" Lap of plates or width of butt straps 25 3/8"
Per centages of strength of longitudinal joint rivets 102.5 Working pressure of shell by rules 254 lbs Size of manhole in shell 16" x 12"
Size of compensating ring No. and Description of Furnaces in each boiler 4 Corrugated Material S Outside diameter 49 1/4"
Length of plain part top Thickness of plates crown 3 3/4" Description of longitudinal joint Weld No. of strengthening rings none bottom
Working pressure of furnace by the rules 254 Combustion chamber plates: Material S Thickness: Sides 1/16" Back 5/16" W. 1/16" Top 1/16" Bottom 29/32"
Pitch of stays to ditto: Sides 9" x 8" Back W 9" x 8" Top W 8 1/2" x 8" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 225
Material of stays S Area at smallest part W-21 Area supported by each stay 72 sq in Working pressure by rules 262 End plates in steam space: Material S Thickness 1 9/32" Pitch of stays 18 1/4" x 18" How are stays secured S. nuts Working pressure by rules 224 Material of stays S
Area at smallest part 784.64 Area supported by each stay 328.5 Working pressure by rules 248 Material of Front plates at bottom S
Thickness 7/8" Material of Lower back plate S Thickness 7/8" Greatest pitch of stays 13 1/2" x 8" Working pressure of plate by rules 215
Diameter of tubes 2 1/2" Pitch of tubes 3 3/4" x 3 5/8" Material of tube plates S Thickness: Front 7/8" Back 13/16" Mean pitch of stays 7 3/8"
Pitch across wide water spaces 13 1/2" Working pressures by rules 218 Girders to Chamber tops: Material S Depth and thickness of girder at centre C-9 1/2" W-8 1/2" Length as per rule 31 9/16" distance apart W-8 1/4" Number and pitch of stays in each W-3 @ 8" C-4 @ 6 1/2"
Working pressure by rules 222 Steam dome: description of joint to ✓ % 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 ✓ plates ✓ Thickness ✓ How stayed ✓

UPERHEATER. Type ✓ Date of Approval of ✓ Tested by Hydraulic Pressure to ✓
Date of Test ✓ Is a Safety Valve fitted ✓ Superheater which can be shut off from the Boiler ✓
Diameter of Safety Valve ✓ Pressure to which tested ✓ Is Easing Gear fitted ✓



IS A DONKEY BOILER FITTED? *no*

If so, is a report now forwarded?

SPARE GEAR. State the articles supplied:— 1 set each of top & bottom end, main bearing & coupling bolts & nuts, 1 pair of top end & 1 pair of bottom end braces, 1 pair of main bearing braces, 1 set of rings for each size piston & piston valves, 1 impeller & shaft, 2 bronze propeller blades, spare parts for auxiliary feed & donkey pumps, 1 air pump head valve, bucket & rod, 1 eccentric rod, chains & strap, 4 safety valve springs, 12 junk ring bolts & nuts, 1 set of feed check valves, 1 set of boiler tubes (plain) & 4 stay tubes, 50 condenser tubes & 100 ferrules, 1 set of bilge pump valves, 1 set of valves for wear feed pumps, assorted bolts, nuts & washers.

The foregoing is a correct description,

ALEXANDER STEPHEN & SONS, LIMITED.

T.W. McElmoil

Manufacturer.

Secretary.

Dates of Survey while building { During progress of work in shops - - { 1915: - Jun 18 July 7 Oct 8 (1917) Sep 7 (1918) July 9 Aug 12-13-22 Sep 11 Oct 2-22-31 Nov 20 28 Dec 11 18 (1919) Jan 9 15 Feb 11-18-27-28
During erection on board vessel - - { Mar 14 18 May 8 9 14 19 22 28 Jun 2 12 19 25 July 2 Aug 8 11 Sep 3 16 24 Oct 1 3 8 20 28 Nov 5 17 24 Dec 4 11 17 22 27 29 (1920) Jan 9 13 15 24 30
Feb 4 10 13 16 24 Mar 14 5 Apr 16 May 5 14 16 June 4 9 10 Aug 12 Sep 29 Oct 22 Nov 3 17 20 29 30 Dec 6
Total No. of visits 82 Is the approved plan of main boiler forwarded herewith *Yes*

Dates of Examination of principal parts—Cylinders 17-12-19 Slides 17-12-19 Covers 17-12-19 Pistons 17-12-19 Rods 17-12-19
Connecting rods 17-12-19 Crank shaft 24-9-19 Thrust shaft 24-9-19 Tunnel shafts 24-9-19 Screw shaft 24-9-19 Propeller 24-9-19
Stern tube 4-12-19 Steam pipes tested 15-3-20 Engine and boiler seatings 24-2-20 Engines holding down bolts 25-6-20
Completion of pumping arrangements 6-12-20 Boilers fixed 25-6-20 Engines tried under steam 6-12-20

Completion of fitting sea connections 24-2-20 Stern tube 24-2-20 Screw shaft and propeller 24-2-20

Main boiler safety valves adjusted 25-6-20 Thickness of adjusting washers *See below*

Material of Crank shaft *S* Identification Mark on Do. *LLOYD'S N°469* Material of Thrust shaft *S* Identification Mark on Do. *LLOYD'S N°469*

Material of Tunnel shafts *S* Identification Marks on Do. *—* Material of Screw shafts *S* Identification Marks on Do. *—*

Material of Steam Pipes *Lapwelded iron* Test pressure *645 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 *T.S.S. "hariva" Reg N° 39962*

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

Thickness of safety valve adjusting washers.

Fore Port boiler.

F.V. 7/16" A.V. 13/32"

Fore Starboard boiler.

F.V. 5/16" A.V. 15/32"

After Port boiler

F.V. 13/32" A.V. 13/32"

Centre boiler. After Starboard boiler.

F.V. 3/8" A.V. 3/8" F.V. 11/32" A.V. 5/16"

These engines & 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. 12-20.

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 12-20 FD.

MACHINERY CERTIFICATE WRITTEN 23/2/20 dated 15/12/20

Roll 25/12/20 J.M.

The amount of Entry Fee ... £ 3 : 0 : When applied for,

Special ... £ 72 : 7 : 6 13/12/19 20

Donkey Boiler Fee ... £ : : When received,

Travelling Expenses (if any) £ : : 19-2-19 20

Committee's Minute *Glasgow 14 DEC 20*

Assigned *+ L.M.C. 12,20*

J.D. Mayor's Signa

Engineer Surveyor to Lloyd's Register of Shipping.



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Certificate (if required) to be sent to Glasgow

H.C. 11/12/20