Rpt. 4.

REPORT ON MACHINERY.

No. 27974

Date of writing Report 8-11-1920 When handed in at Local Office 9-11-1920 Port of Sunderland.

No. in Reg. Book. Survey held at Sunderland Date, First Survey 18 Sept. 19 Last Survey 23rd Dec 1920 (15th July 1920 to 22nd Dec. 20 Trial) (Number of Visits 83)

Y85744 on the new Steel S.S. DELAWARE. Tons Gross 4507 Net 2484.

Master S. Jarvis Built at Middlesbrough By whom built Messrs Furness Shipbldg Co Ld (No 21) When built 1920

Engines made at Sunderland By whom made Messrs Richardsons Westgarth & Co Ld (No 2155) When made 1920

Boilers made at do. By whom made do. do. do. when made 1920

Registered Horse Power Owners Actiesselskabet Mexico Gulf Linien Port belonging to Copenhagen

Nom. Horse Power as per Section 28 538 ✓ 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 26, 43, 73 Length of Stroke 48" Revs. per minute 70 Dia. of Screw shaft as per rule 14-4" as fitted 15½" Material of screw shaft Wt. iron

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 5'-2¼"

Dia. of Tunnel shaft as per rule 13·06 as fitted 13¼" Dia. of Crank shaft journals as per rule 13·4" as fitted 14¼" Dia. of Crank pin 14½" Size of Crank webs 24½" x 9" Dia. of thrust shaft under collars 14¼" Dia. of screw 14'-3" Pitch of Screw 18'-0" No. of Blades 4 State whether moveable No Total surface 95 ☐ft

No. of Feed pumps 2 Diameter of ditto 4½" Stroke 24" Can one be overhauled while the other is at work Yes ✓

No. of Bilge pumps 2 Diameter of ditto 4½" Stroke 24" Can one be overhauled while the other is at work Yes ✓

No. of Donkey Engines 4 Sizes of Pumps two Weir feed 8 x 10½ x 21 one 8 x 5½ x 8"; one 9 x 11 x 10 No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 4 @ 3½" ✓ In Holds, &c. 2 of 3½" in No's 1, 2, 3 & 4 holds 1 of 3½" in No 5 Hold and 1 of 2½" in Tunnel Well

No. of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump C.P. Is a separate Donkey Suction fitted in Engine room & size Yes; 3½" ✓

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 Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper platform.

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

Total Heating Surface of Boilers 8166 ☐ft ✓ Is Forced Draft fitted Yes No. and Description of Boilers Three S.E. Cylindrical Multitubular

Working Pressure 180 ✓ Tested by hydraulic pressure to 360 Date of test 5-3-20 No. of Certificate 3665.

Can each boiler be worked separately Yes Area of fire grate in each boiler 64 ☐ft No. and Description of Safety Valves to each boiler 2 Spring loaded Area of each valve 12·57 ☐" Pressure to which they are adjusted 185 Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers or woodwork 1-6 Mean dia. of boilers 15'-9" Length 12'-0" Material of shell plates Steel

Thickness 19/32" ✓ Range of tensile strength 28¾" to 32¾" Are the shell plates welded or flanged No Descrip. of riveting: cir. seams T.R. long. seams T.R., D.B.S Diameter of rivet holes in long. seams 19/32" ✓ Pitch of rivets 8¾" ✓ Lap of plates or width of butt straps 1-6¼" ✓

Per centages of strength of longitudinal joint rivets 85·6 plate 85·35 Working pressure of shell by rules 188·7 Size of manhole in shell 16½" x 13"

Size of compensating ring 30½" x 29" No. and Description of Furnaces in each boiler 3 Deighton ✓ Material Steel ✓ Outside diameter 4'-1¾" ✓

Length of plain part top ✓ bottom Thickness of plates crown 21/32" bottom Description of longitudinal joint Welded ✓ No. of strengthening rings ✓

Working pressure of furnace by the rules 215 Combustion chamber plates: Material Steel Thickness: Sides 19/32" Back 19/32" Top 19/32" Bottom 25/32"

Pitch of stays to ditto: Sides 8¼" x 7½" Back 8⅜" x 8" Top 8¾" x 7½" If stays are fitted with nuts or riveted heads Nuts ✓ Working pressure by rules 181·2

Material of stays Steel Area at smallest part 1·73 ☐" Area supported by each stay 67 ☐" Working pressure by rules 206 End plates in steam space:

Material Steel Thickness 1⅛" ✓ Pitch of stays 16" x 19⅞" How are stays secured D.N. & W. Working pressure by rules 184·1 Material of stays Steel

Area at smallest part 6·10 ☐" Area supported by each stay 318 ☐" Working pressure by rules 200 Material of Front plates at bottom Steel

Thickness 7/8" Material of Lower back plate Steel ✓ Thickness 13/16" Greatest pitch of stays 13½" ✓ Working pressure of plate by rules 185·5

Diameter of tubes 2½" ✓ Pitch of tubes 3¾" x 3 11/16" Material of tube plates Steel Thickness: Front 15/16" ✓ Back ¾" ✓ Mean pitch of stays 9 5/16"

Pitch across wide water spaces 13½" ✓ Working pressures by rules 185 Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9" x 11½" ✓ Length as per rule 2'-8¼" Distance apart 8¾" ✓ Number and pitch of stays in each 3 @ 7½" ✓

Working pressure by rules 185 ~~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 connecting rod top and bottom end bolts and nuts; two main bearing bolts and nuts; one set of coupling bolts & nuts; one set of feed & bilge jump valves; bolts, nuts, and iron of assorted sizes; one propeller; one screw shaft.

The foregoing is a correct description,

FOR RICHARDSONS, WESTGARTH & CO., LTD.

Reuben H. Russell
ASSISTANT MANAGER
Manufacturer.

Dates of Survey while building — During progress of work in shops: 1919 Sep 18 24 25 Oct 3 16 24 31 Nov 7 14 17 20 21 26 29 Dec 3 5 19 Jan 8 9 16 26 30 Feb 6 12 13
During erection on board vessel: 22 27 Mar 5 9 17 24 Apr 12 21 May 3 4 14 21 Jun 5 29 Jul 9 Aug 16 23 31 Sep 3 9 20 23 29 Oct 7 9 12
Total No. of visits 12 14 20 22 26 28 Nov 1 2 3 (61 Sea & 62 Dock)

Is the approved plan of main boiler forwarded herewith Yes

" " " donkey " " " —

Dates of Examination of principal parts—Cylinders 12-4-20 Slides 4-5-20 Covers 27-2-20 Pistons 4-5-20 Rods 26-11-19
Connecting rods 14-11-19 Crank shaft 11-11-19 Thrust shaft 12-2-20 Tunnel shafts 14-5-20 Screw shaft 20-4-20 Propeller 9-9-20
Stern tube 23-8-20 Steam pipes tested 13-7-20; 26-10-20 Engine and boiler seatings 11-8-20 Engines holding down bolts 14-10-20
Completion of pumping arrangements 23-12-20 Boilers fixed 9-10-20 Engines tried under steam 3-11-20
Completion of fitting sea connections 11-8-20 Stern tube 20-9-20 Screw shaft and propeller 20-9-20
Main boiler safety valves adjusted 3-11-20 Thickness of adjusting washers P. bkr. – P 13/16, S. 7/16; C. bkr. – P 15/32, S. 7/16; S. bkr. – P 13/32
Material of Crank shaft Ing. Steel Identification Mark on Do. 6134 A.B Material of Thrust shaft Ing. Steel Identification Mark on Do. 2155 E.W.
Material of Tunnel shafts Wrt iron Identification Marks on Do. 2155 E.W.R Material of Screw shafts Wrt iron Identification Marks on Do. 6141(A) A
Spare " " " " Spare 6206. L.C.
Material of Steam Pipes Steel – Lap welded Test pressure 540 lbs. □"
Is an installation fitted for burning oil fuel Yes Is the flash point of the oil to be used over 150°F. Yes.
Have the requirements of Section 49 of the Rules been complied with Yes
Is this machinery duplicate of a previous case No. If so, state name of vessel —

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

The machinery has been built and installed under special survey. The Materials and Workmanship are good.

The vessel has returned to the Builders' yard for completion.

To complete the Machinery survey, the Hold pumping connections, the Electric light installation, and oil fuel pumps controls from deck to be examined.

On completion of Survey the Vessel's Machinery is eligible in my opinion for Classification and the record ✠ LMC with date

The Oil fuel & General pumping arrangement satisfactorily completed 12.20

It is submitted that this vessel is eligible for THE RECORD. +LMC. 12.20 FD
FITTED FOR OIL FUEL 12.20. FP ABOVE 150°F.

20/1/21

Certificate (if required) to be sent to SUNDERLAND.

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

The amount of Entry Fee	£	3 : — :	When applied for, 9 NOV 1920
Special	£	46 : 18 :	
Donkey Boiler Fee	£	: :	When received, 24/12/1920
Travelling Expenses (if any)	£	: :	

Ed. W. Hutter & Wm Cowie
Engineer Surveyor to Lloyd's Register of Shipping.

FEB. JAN. 28 1921 per Lon. advice WLB.

Committee's Minute

Assigned +LMC. 12.20. F.D.
Fitted for oil fuel 12.20
F.P. above 150°F.

CERTIFICATE WRITTEN 27.6.21