

REPORT ON MACHINERY.

No. 71858
WED. AUG. 19. 1914

Received at London Office

Date of writing Report 18 AUG 1914 When handed in at Local Office 18 AUG 1914 to Port of LIVERPOOL
 No. in Survey held at Birkenhead Date, First Survey May 27 Last Survey Jul 30 1914
 Reg. Book. 433 on the twi screw train ferry steamer "Leonard" (Number of Visits) 104 Gross 3365 Tons
 Master Holloway Built at Birkenhead By whom built Cammell Laird & Co. Ltd. When built 1914 Net 1491
 Engines made at Birkenhead By whom made Cammell Laird & Co. Ltd. when made 1914-42
 Boilers made at Birkenhead By whom made Cammell Laird & Co. Ltd. when made 1914-42
 Registered Horse Power _____ Owners National Trans-Continental Ry Co. of Canada Port belonging to Suebec
 Nom. Horse Power as per Section 28 524 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Triple Expansion, twi screws No. of Cylinders 26 No. of Cranks 26
 Dia. of Cylinders 23" x 35" x 55" Length of Stroke 33" Revs. per minute 120 Dia. of Screw shaft as per rule 10.80 Material of screw shaft steel
 as fitted 11.2
 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 If two liners are fitted, is the shaft lapped or protected between the liners _____ Length of stern bush 4'-3"
 Dia. of Tunnel shaft as per rule 10.10 Dia. of Crank shaft journals as per rule 10.6 Dia. of Crank pin 11.4 Size of Crank webs 7.4" x 1-9.8 mean Dia. of thrust shaft under collars 11.4 Dia. of screw 10'-6" Pitch of Screws 13'-9" No. of Blades 3 State whether moveable no Total surface 35-ft
 No. of Feed pumps 1 pair Diameter of ditto 9" Stroke 24" Can one be overhauled while the other is at work yes
 No. of Bilge pumps 2 Diameter of ditto as 10" Stroke 10" Can one be overhauled while the other is at work yes
 No. of Donkey Engines _____ Sizes of Pumps _____ No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room two 3.2", one special 3.2", boiler r. two 3.2" In Holds, &c. one for 3.2", one aft 2.2"

No. of Bilge Injections as 8" Connected to circulating pump yes Is a separate Donkey Suction fitted in Engine room & size yes, 3.2"
 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 yes
 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
 Dates of examination of completion of fitting of Sea Connections 18-6-14 of Stern Tube 9-7-14 Screw shaft and Propeller 10-7-14
 Is the Screw Shaft Tunnel watertight no tunnel Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record (S) Manufacturers of Steel Steel Co. of Scotland
 Total Heating Surface of Boilers 10400 As Forced Draft fitted no No. and Description of Boilers 8 S. I. multitubular
 Working Pressure 165 lbs Tested by hydraulic pressure to 330 lbs Date of test 9-10-13 No. of Certificate 1980
 Can each boiler be worked separately yes Area of fire grate in each boiler 43 3/4 No. and Description of Safety Valves to each boiler two spring loaded Area of each valve 9.816 Pressure to which they are adjusted 169 lbs Are they fitted with easing gear yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 8 ft Mean dia. of boilers 12'-4 1/2" Length 9'-6" Material of shell plates steel
 Thickness 15 1/16" Range of tensile strength 28/32 Tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams D.R.
 long. seams T.R. hot straps Diameter of rivet holes in long. seams 1" Pitch of rivets 7.21 x 3.6 Lap of plates or width of butt straps 14 15/16"
 Per centages of strength of longitudinal joint rivets 86.75 Working pressure of shell by rules 165-8 lbs Size of manhole in shell 16" x 12"
 plate 86.1
 Size of compensating ring 4 3/4 x 1" No. and Description of Furnaces in each boiler 2 horizontal Material steel Outside diameter 4'-2"
 Length of plain part top 8 1/2" Thickness of plates crown 9/16" Description of longitudinal joint welded No. of strengthening rings _____
 bottom 9/16"
 Working pressure of furnace by the rules 176.2 lbs combustion chamber plates: Material steel Thickness: Sides 9/16" Back 9/16" Top 9/16" Bottom 15/16"
 Pitch of stays to ditto: Sides 8 1/4" x 8" Back 8" x 8 1/4" Top 8" x 8 1/4" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 165-6 lbs
 Material of stays steel Diameter at smallest part 1.354 Area supported by each stay 66 sq" Working pressure by rules 175 lbs and plates in steam space:
 Material steel Thickness 1 1/32" Pitch of stays 17" x 17" How are stays secured nuts & washers Working pressure by rules 174.5 lbs Material of stays steel
 Diameter at smallest part 2 1/16" Area supported by each stay 289 sq" Working pressure by rules 167.5 lbs Material of Front plates at bottom steel
 Thickness 15 1/16" Material of Lower back plate steel Thickness 25/32" Greatest pitch of stays 14 1/4" x 6 1/4" Working pressure of plate by rules 174.5 lbs
 Diameter of tubes 3 1/4" Pitch of tubes 4 3/8" V x H Material of tube plates steel Thickness: Front 15/16" Back 13/16" Mean pitch of stays 10 1/16"
 Pitch across wide water spaces 14 1/4" Working pressures by rules 166.5 lbs Girders to Chamber tops: Material steel Depth and
 thickness of girder at centre 6" x 27" x 2 Length as per rule 2'-1 29/32" Distance apart 8 1/4" Number and pitch of stays in each two 8 1/4" x 8"
 Working pressure by rules 168.8 lbs Superheater or Steam chest; how connected to boiler _____ Can the superheater be shut off and the boiler worked
 separately _____
 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 easing gear _____

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	Description of Safety
		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	Rivets Plates
		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 coupling bolts, 1 set feed & bilge pump valves, 1 set piston springs, assorted bolts & nuts, 1 set of various eyes, 1 crank shaft, 1 screw shaft, 1 propeller, 1 air pump rod etc

The foregoing is a correct description,

GAMMELL LAIRD AND COMPANY LIMITED

Manufacturer.

ENGINEERING MANAGER

Dates of Survey while building	During progress of work in shops	During erection on board vessel	Total No. of visits
1913 May 27 Jun 24, 27, 30 Jul 5, 9, 15, 21, 28 Aug 7, 19, 20, 27, 29 Sep 1, 2, 5, 9, 10, 11, 17, 20, 25, 26 Oct 2, 8, 10, 14, 15, 16, 20, 21, 21, 23, 28, 30, 31 Nov 4, 6, 7, 8, 11, 12, 13, 24, 26, 28 Dec 1, 4, 8, 15, 16, 23, 29, 31 1914 Jan 6, 15, 17, 21, 22, 23, 26, 27, 30 Feb 3, 4, 6, 9, 11, 21, 24, 25 Mar 2, 5, 9, 13, 23, 25, 27, 30 Apr 1, 2, 3, 5, 15, 17, 30 May 9, 11, 12, 15, 16, 23 July 7, 8, 9, 10, 20, 21, 22, 23, 24, 29, 30	104		

Dates of Examination of principal parts—Cylinders 27-6-13 Slides 12-11-13 Covers 14-10-13 Pistons 15-12-14 Rods 9-9-13
Connecting rods 4-11-13 Crank shaft 5-9-13 Thrust shaft 20-10-13 Tunnel shafts 18-7-13 Screw shaft 10-4-14 Propeller 18-6-14
Stern tube 7-7-14 Steam pipes tested 9-2-14 Engine and boiler seatings 4-12-13 Engines holding down bolts 18-2-14
Completion of pumping arrangements 17-4-14 Boilers fixed 12-5-14 Engines tried under steam 28-7-14
Main boiler safety valves adjusted 21-7-14 Thickness of adjusting washers See below.
Material of Crank shaft steel Identification Mark on Do. 250 JD 266 Material of Thrust shafts steel Identification Mark on Do. 249-468
Material of Tunnel shafts steel Identification Marks on Do. 490 Material of Screw shafts steel Identification Marks on Do. 480-464
Material of Steam Pipes lap welded iron & solid brass steel Test pressure 1495 lbs.

General Remarks (State quality of workmanship, opinions as to class, &c.) The machinery of this vessel has been built under Special Survey and in accordance with the approved plans herewith enclosed. The materials and workmanship are of a good quality and when tried under steam were found satisfactory in every respect and now eligible in our opinion for the notification in the Register Book + LMC 7, 14

Port Side	Forward Valve	Aft Valve	Std. Size	7/16"	1/2"
No. 1 Boiler (forward)	1/4 full	9/32	No. 5-Balk. ft.	11/64	9/32
No. 2 "	11/64	9/32	" 6 "	9/32	7/32
" 3 "	9/32	13/64	" 7 "	1/4	9/32
" 4 "	17/64	9/32	" 8 "	13/64	1/4

The amount of Entry Fee .. £ 3 : 0 : 0 When applied for.
Special .. £ 46 : 4 : 0 18 AUG 1914
LIFTING ENGINE }
Donkey Engine Fee }
CE ENGINE }
Traveling Expenses (if any) £ : : 5 : 10 : 0 When received.

John Dykes & Wm. Kinley
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute 18 AUG 1914
Assigned III LMC 7: 14



Certificate (if required) to be sent to the Surveymen and registered not to write on or below the space for Committee's Minute.