

REPORT ON MACHINERY.

No. 71856
WED. AUG. 19. 1914

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

ENGINE, &c. Description of Engine Inverted Compound. No. of Cylinders 2 No. of Cranks 2
 Dia. of Cylinders 15" 4-32" Length of Stroke 21" Revs. per minute 130 Dia. of Screw shaft as per rule 7 1/8" Material of screw shaft steel
 Is the screw shaft fitted with a continuous liner the whole length of the stern tube no Is the forward 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 yes Length of stern bush 2'-8"
 Dia. of Tunnel shaft as per rule 6 7/8" Dia. of Crank shaft journals as per rule 7 1/2" Dia. of Crank pin 7 1/2" Size of Crank webs 4 3/8" thick Dia. of thrust shaft under
 collars 7 1/2" Dia. of screw 4'-6" Pitch of Screw 9'-9" No. of Blades 3 State whether moveable no Total surface 20 #
 No. of Feed pumps — Diameter of ditto — Stroke — Can one be overhauled while the other is at work —
 No. of Bilge pumps — Diameter of ditto — Stroke — Can one be overhauled while the other is at work —
 No. of Donkey Engines — Sizes of Pumps — No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room — In Holds, &c. —
 No. of Bilge Injections — sizes — Connected to condenser, or to circulating pump — Is a separate Donkey Suction fitted in Engine room & size —
 Are all the bilge suction pipes fitted with roses — Are the roses in Engine room always accessible — Are the sluices on Engine room bulkheads always accessible
 Are all connections with the sea direct on the skin of the ship — Are they Valves or Cocks —
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates — Are the Discharge Pipes above or below the deep water line —
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel — Are the Blow Off Cocks fitted with a spigot and brass covering plate —
 What pipes are carried through the bunkers — How are they protected —
 Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times —
 Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges —
 Dates of examination of completion of fitting of Sea Connections ✓ of Stern Tube 7-7-14 Screw shaft and Propeller was disconnected
 Is the Screw Shaft Tunnel watertight ✓ Is it fitted with a watertight door ✓ worked from ✓

BOILERS, &c. (Letter for record) Manufacturers of Steel

Total Heating Surface of Boilers	Is Forced Draft fitted	No. and Description of Boilers
Working Pressure	Tested by hydraulic pressure to	Date of test
Can each boiler be worked separately	Area of fire grate in each boiler	No. and Description of Safety Valves to each boiler
Area of each valve	Pressure to which they are adjusted	Are they fitted with easing gear
Smallest distance between boilers or uptakes and bunkers or woodwork	Mean dia. of boilers	Length
Material of shell plates	Thicknes	Range of tensile strength
Are the shell plates welded or flanged	Descrip. of riveting: cir. seams	long. seams
Diameter of rivet holes in long. seams	Pitch of rivets	Lap of plates or width of butt straps
Per centages of strength of longitudinal joint	Working pressure of shell by rules	Size of manhole in shell
Size of compensating ring	No. and Description of Furnaces in each boiler	Material
Outside diameter	Length of plain part	Thickness of plates
Description of longitudinal joint	No. of strengthening rings	Working pressure of furnace by the rules
Combustion chamber plates	Material	Thickness: Sides
Back	Top	Bottom
Pitch of stays to ditto: Sides	Back	Top
If stays are fitted with nuts or riveted heads	Working pressure by rules	Material of stays
Material of stays	Diameter at smallest part	Area supported by each stay
Working pressure by rules	End plates in steam space:	Material
Thickness	Pitch of stays	How are stays secured
Working pressure by rules	Material of Front plates at bottom	Diameter at smallest part
Area supported by each stay	Working pressure by rules	Material of Front plates at bottom
Thickness	Material of Lower back plate	Thickness
Greatest pitch of stays	Working pressure of plate by rules	Diameter of tubes
Pitch of tubes	Material of tube plates	Thickness: Front
Back	Mean pitch of stays	Pitch across wide water spaces
Working pressures by rules	Girders to Chamber tops: Material	Depth and thickness of girder at centre
Length as per rule	Distance apart	Number and pitch of stays in each
Working pressure by rules	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		

If not, state whether, and when, one will be sent

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:—

The foregoing is a correct description,

Manufacturer.

GAMMELL LAIRD AND COMPANY LIMITED,

ENGINEERING MANAGER

Dates of Survey while building
 During progress of work in shops --
 During erection on board vessel ---
 Total No. of visits

Is the approved plan of main boiler forwarded herewith

" " " donkey " " "

Dates of Examination of principal parts—Cylinders 15-7-14 Slides 15-12-14 Covers 14-10-13 Pistons 4-11-13 Rods 5-9-13
 Connecting rods 18-2-14 Crank shaft 9-2-14 Thrust shaft 12-11-13 Tunnel shafts 20-10-13 Screw shaft 10-7-14 Propeller 18-6-14
 Stern tube 7-7-14 Steam pipes tested Engine and boiler seatings 4-12-13 Engines holding down bolts 18-2-14
 Completion of pumping arrangements Boilers fixed Engines tried under steam 28-7-14
 Main boiler safety valves adjusted Thickness of adjusting washers
 Material of Crank shaft *steel* Identification Mark on Do. 729 Material of Thrust shaft *steel* Identification Mark on Do. 459
 Material of Tunnel shafts Identification Marks on Do. Material of Screw shafts *steel* Identification Marks on Do. 473
 Material of Steam Pipes *lap welded wrought iron* Test pressure 495 lbs.

General Remarks (State quality of workmanship, opinions as to class, &c. *This engine is intended for ice-breaking purposes in the St. Lawrence River, it has been built under Special Survey and in accordance with the approved plan herewith enclosed, the materials and workmanship are of a good quality and when tried under steam were found satisfactory in every respect.*)

Certificate (if required) to be sent to

The amount of Entry Fee .. £	When applied for,
Special £19.....
Donkey Boiler Fee £	When received,
Travelling Expenses (if any) £19.....

See report attached

John Dykes & W. H. Kinlay
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute 18 AUG 1914
 Assigned *See report attached*

