

REPORT ON MACHINERY

No. 71858
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 20* 1914
 Reg. Book. *433* on the *two screw twin ferry steamer "Leonard"* Number of Visits *3815*
 Master *Birkenhead* Built at *Birkenhead* By whom built *Cammell Laird & Co. Ltd.* Tons { Gross *3815*
 Engines made at *Birkenhead* By whom made *Cammell Laird & Co. Ltd.* when made *1914* Net *1491*
 Boilers made at *Birkenhead* By whom made *Cammell Laird & Co. Ltd.* when made *1914*
 Registered Horse Power *1200* Owners *National Trans-Continental Ry. Co. of Canada.* Port belonging to *Quebec*
 Nom. Horse Power as per Section 28 *1200* Is Refrigerating Machinery fitted for cargo purposes *No* Is Electric Light fitted *Yes*

ENGINES, &c.—Description of Engine *4 Cyl. H.P. horizontal* No. of Cylinders *4* No. of Cranks *4*
 Dia. of Cylinders *14 1/2"* Length of Stroke *20"* Revs. per minute *280* Dia. of Screw shaft *as per rule* Material of screw shaft *as fitted*
 Is the screw shaft fitted with a continuous liner the whole length of the stern tube *✓* 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 *✓*
 Dia. of Tunnel shaft *as per rule* Dia. of Crank shaft journals *as per rule* Dia. of Crank pin *7 1/4"* Size of Crank webs *13 3/4"* Dia. of thrust shaft under collars *as fitted*
 Dia. of screw *✓* Pitch of Screw *✓* No. of Blades *✓* State whether moveable *✓* Total surface *✓*
 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 *✓* Screw shaft and Propeller *✓*
 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 *No. of Certificate*
 Can each boiler be worked separately *Area of fire grate in each boiler* No. and Description of Safety Valves to each boiler *Are they fitted with easing gear*
 Area of each valve *Pressure to which they are adjusted*
 Smallest distance between boilers or uptakes and bunkers or woodwork *Mean dia. of boilers* Length *Material of shell plates*
 Thickness *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 *End plates in steam space:*
 Material of stays *Diameter at smallest part* Area supported by each stay *Working pressure by rules* Material of stays
 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 *Diam. of rivet*
 Diameter *Length* Thickness of shell plates *Material* Description of longitudinal joint *Thickness*
 holes *Pitch of rivets* Working pressure of shell by rules *Diameter of flue* Material of flue plates
 If stayed 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 casing 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 :—

The foregoing is a correct description,

Manufacturer.

CAMMELL 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

Dates of Examination of principal parts—Cylinders 27-6-13 Slides 15-7-13 Covers 10-7-14 Pistons 9-9-13 Rods 4-11-13

Connecting rods 15-12-14 Crank shaft 20-10-13 Thrust shaft ✓ Tunnel shafts ✓ Screw shaft ✓ Propeller ✓

Stern tube ✓ Steam pipes tested ✓ Engine and boiler seatings ✓ Engines holding down bolts ✓

Completion of pumping arrangements ✓ Boilers fixed ✓ Engines tried under steam ✓

Main boiler safety valves adjusted ✓ Thickness of adjusting washers ✓

Material of Crank shaft Steel Identification Mark on Do. 739 Material of Thrust shaft ✓ Identification Mark on Do. ✓

Material of Tunnel shafts ✓ Identification Marks on Do. ✓ Material of Screw shafts ✓ Identification Marks on Do. ✓

Material of Steam Pipes lap welded boiler iron Test pressure 495 lbs.

General Remarks (State quality of workmanship, opinions as to class, &c. This engine is intended for lifting the railway car deck; 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.

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

Committee's Minute

Assigned

See report attached.

John Dykes & W. G. H. Willey
Engineer Surveyors to Lloyd's Register of British & Foreign Shipping.



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