

REPORT ON MACHINERY

No. 4774

Received at London Office TUE 17 APR 1921

Date of writing Report 10 When handed in at Local Office 11 April 1921 Port of MANCHESTER
 No. in Survey held at MANCHESTER Date, First Survey 27-10-1919 Last Survey 30-3-1921
 Reg. Book. on the STEAM TURBINES N^o 1737/8 and DOUBLE REDUCTION GEAR N^o 1739. (Number of Visits 31) Tons { Gross 10441
 Net 6576
 Master Built at Greenock By whom built Lithgow & Co. Ltd. 5/3 731. When built 1921.
 Engines made at MANCHESTER By whom made METROPOLITAN-VICKERS E.C.L. when made 1921-3.
 Boilers made at Greenock By whom made John G. Kincaid & Co. when made 1921.
 Registered Horse Power 1398 NHP. Owners The Blue Star Line (1920) Ltd Port belonging to London.
 Shaft Horse Power at Full Power 5250 Is Refrigerating Machinery fitted for cargo purposes Y. Is Electric Light fitted Y.

TURBINE ENGINES, &c. — Description of Engines RAEAU STEAM TURBINES & D.R. GEAR No. of Turbines 2
 Diameter of Rotor Shaft Journals, H.P. 4 1/2" L.P. 4 1/2" Diameter of Pinion Shaft 6" at bearings flexible shaft 3 5/8" diam.
 Diameter of Journals 1st 6" 2nd 13" Distance between Centres of Bearings 1st 37" 2nd 79" Diameter of Pitch Circle 1st 8.407" 2nd 20.121"
 Diameter of Wheel Shaft 1st 13" 2nd 17 1/2" Distance between Centres of Bearings 1st 79" 2nd 75" Diameter of Pitch Circle of Wheel 1st 63.591" 2nd 99.874"
 Width of Face 1st 20" 2nd 36" Diameter of Thrust Shaft under Collars _____ Diameter of Tunnel Shaft _____ as per rule
 No. of Screw Shafts ONE. Diameter of same _____ as fitted _____ Diameter of Propeller _____ Pitch of Propeller _____
 No. of Blades _____ State whether Moveable _____ Total Surface _____ Diameter of Rotor Drum, H.P. _____ L.P. _____ Astern _____
 Thickness at Bottom of Groove, H.P. _____ L.P. _____ Astern _____ Revs. per Minute at Full Power, Turbine 3060. Propeller 81.5.

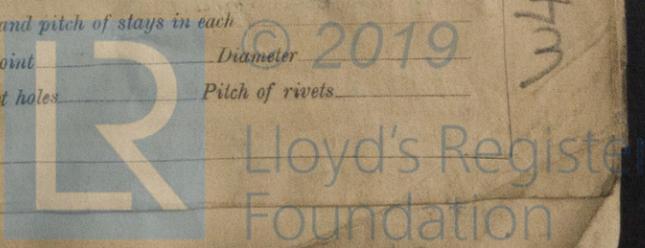
ARTICULARS OF BLADING.

	H.P.			L.P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
WHEEL							H.P.		
1ST	4 1/2"	3 2 3/8" + 3 3/4"	2	3 5/8"	3 5 1/8"	1	2" + 3"	3 3 3/4" + 3 4 1/2"	2
2ND	1 1/2"	3 3 3/8"	1	3 3/8"	3 5 3/8"	1			
3RD	1 1/2"	3 3 5/8"	1	4 1/4"	3 6 3/4"	1	L.P.		
4TH	1 1/2"	3 3 3/4"	1	5 1/2"	3 7 1/2"	1	3"	3 1"	1
5TH	2 1/2"	3 4 1/4"	1	6 3/8"	3 8 3/8"	1	5 3/8"	3 3 3/8"	1
6TH				8 1/4"	3 10 1/4"	1			
7TH				10 3/8"	4 0 3/8"	1			
8TH									

No. and size of Feed pumps _____
 No. and size of Bilge pumps _____
 No. and size of Bilge suction 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 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 _____
 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 _____ 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 _____
 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 _____ rivets _____ Working pressure of shell by rules _____ Size of manhole in shell _____
 plates _____
 Size of compensating ring _____ No. and Description of Furnaces in each Boiler _____ Material _____ Outside diameter _____
 Length of plain part _____ top _____ crown _____ Description of longitudinal joint _____ No. of strengthening rings _____
 bottom _____
 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 _____
 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 _____ Steam dome: description of joint to shell _____ % of strength of joint _____ Diameter _____
 Thickness of shell plates _____ Material _____ Description of longitudinal joint _____ Diameter of rivet holes _____ Pitch of rivets _____
 Working pressure of shell by rules _____ Crown plates: Thickness _____ How stayed _____

8100-897M



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? _____ If so, is a report now forwarded? _____

SPARE GEAR. State the articles supplied:— FOR TURBINES, bearing brasses, thrust bearing, packing gland box, diaphragm

Gland rings, safety governors, springs for ditto, springs for H.P. + L.P. relief valves, bolts & nuts assorted.
FOR GEARS: primary pinion and flexible shaft, one bearing bush for main shaft, two ditto each for high speed
and intermediate shafts, one ditto for flexible shaft, Assorted bolts, nuts & nuts.
Oil System: Pump rod with piston bucket, crosshead &c for oil pump. Bucket rod for double acting pump.
Valves, strainers, springs, thermometers and tubes for oil cooler.
Auxiliaries: Air pump, piston & pump rod, bucket. Circulating pump, impeller shaft, spindle, crank shaft, cone
rod, pistons, valve spindles, eccentric rods & straps, piston rod. Main Condenser 144 tubes, 288 ferrules
& packing.

The foregoing is a correct description,

METROPOLITAN-VICKERS ELECTRICAL CO. LTD.

W. Simpson
Eng. R.D. Manufacturer.

16.23.29.30/3/21 = 31 visits

Dates of Survey while building { During progress of work in shops - - } 27/10/19, 5.10/11/19, 23/12/19, 23/1/20, 3/3/20, 29/3/20, 25/5/20, 5.10.17/6/20, 1.5.8/7/20, 1.15/9/20, 1.26/10/20, 11.17.24/11/20, 6/12/20, 3.4.10.15.24/12/20
{ During erection on board vessel - - - }
Total No. of visits _____

Is the approved plan of main boiler forwarded herewith _____

Dates of Examination of principal parts—Casings July 1920. Rotors February 20 Blading June 1920. Gearing July 1920.

Rotor shaft February 1920 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 and tensile strength of Rotor shaft forged mild steel 39.1 tons 41.1 tons. Identification Mark on Do. DMC

Material and tensile strength of Pinion shaft Nickel steel 43.0 tons 45.0 tons. Identification Mark on Do. DMC

Material of Wheel shaft Steel 27.2 tons Identification Mark on Do. DMC 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 _____ Test pressure _____

Is an installation fitted for burning oil fuel _____ 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 a duplicate of a previous case no If so, state name of vessel _____

General Remarks (State quality of workmanship, opinions as to class, &c.) These turbines, Condenser & D.R. gears have been built under special survey and the materials tested in accordance with the Rules of this Society. The materials and workmanship, so far as can be seen, are sound and good and eligible in my opinion to be classed with record of the L.M.C. Steam trial and subsequent examination of parts satisfactory. This machinery has been forwarded to Greenock.

Mark on coupling of main shaft LLOYDS
30-3-1921
A.C.

Certificate (if required) to be sent to _____
(The Surveyors are requested not to write on or below the space for Committee's Minute.)

The amount of Entry Fee	£ 7 : 8 : 9	When applied for,
Special	£ 35 : 9 : 9	19 _____
Donkey Boiler Fee	£ : : :	When received,
Travelling Expenses (if any)	£ : : :	15/6/1921 gen.

A. Campbell
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 25 OCT 1921

Assigned See Gen. Rpt. 17901 *[Signature]*