

# REPORT ON MACHINERY

No. 4774

Received at London Office 12 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<sup>o</sup> 1737/8 and DOUBLE REDUCTION GEAR N<sup>o</sup> 1739. (Number of Visits 31.) Tons { Gross 10441  
 Net 6576  
 Master Built at Greenwich By whom built Lithgow & Co. Ltd. When built 1921.  
 Engines made at MANCHESTER By whom made METROPOLITAN-VICKERS E.C.L. when made 1921-3.  
 Boilers made at Greenwich By whom made John & Richard Ashd 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 Yes Is Electric Light fitted Yes

TURBINE ENGINES, &c.—Description of Engines RATEAU STEAM TURBINES 1 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 1/2" diam.  
 Diameter of Journals 1 1/2" 2 1/2" 1 3/4" Distance between Centres of Bearings 1 3/4" 2 1/2" 79" Diameter of Pitch Circle 1 1/2" 8.407" 2 1/2" 20.121"  
 Diameter of Wheel Shaft 1 1/2" 2 1/2" 1 7/8" Distance between Centres of Bearings 1 1/2" 79" 2 1/2" 75" Diameter of Pitch Circle of Wheel 1 1/2" 63.591" 2 1/2" 99.874"  
 Width of Face 1 1/2" 2 1/2" 36" Diameter of Thrust Shaft under Collars Diameter of Tunnel Shaft as per rule as fitted  
 No. of Screw Shafts ONE Diameter of same as per rule 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.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST WHEEL	1 1/2" + 2 1/2"	3 1/2" + 3 1/4"	2	3 1/2"	3 5/16"	1	H.P.	2" + 3"	3 3/4" + 3 1/4"	2					
2ND "	1 1/2"	3 3/16"	1	3 3/8"	3 5/8"	1									
3RD "	1 1/2"	3 3/8"	1	4 1/4"	3 6 3/4"	1									
4TH "	1 1/2"	3 3/4"	1	5 1/2"	3 7 1/2"	1	L.P.	3"	3 1"	1					
5TH "	2 1/2"	3 4/4"	1	6 3/8"	3 8 3/8"	1	5 1/8"	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 No. of Certificate  
 Working Pressure Tested by hydraulic pressure to Date of test No. and Description of Safety Valves to  
 Can each boiler be worked separately Area of fire grate in each boiler Are they fitted with easing gear  
 each boiler Area of each valve Pressure to which they are adjusted Length Material of shell plates  
 Smallest distance between boilers or uptakes and bunkers or woodwork Mean dia. of boilers Descrip. of riveting: cir. seams  
 Thickness Range of tensile strength Are the shell plates welded or flanged Lap of plates or width of butt straps  
 long. seams Diameter of rivet holes in long. seams Pitch of rivets Size of manhole in shell  
 Per centages of strength of longitudinal joint rivets Working pressure of shell by rules  
 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 Thickness of plates 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 Working pressure of plate by rules  
 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



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 governor, springs for ditto, springs for H.P. &amp; L.P. relief valves, bolts &amp; 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 &amp; washers.

Oil System, Pump rod with piston bucket, crosshead & pin 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, connecting 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.

Manufacturer.

16.23.29.30/3/21 = 31 21/21

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—Casings

Rotors

Blading

Propeller

Rotor shaft

Thrust shaft

Tunnel shafts

Screw shaft

Engines holding down bolts

Stern tube

Steam pipes tested

Engine and boiler seatings

Engines tried under steam

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 44.1 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

If so, state name of vessel

General Remarks

(State quality of workmanship, opinions as to class, &amp;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.

The amount of Entry Fee

Special

Donkey Boiler Fee

Travelling Expenses (if any)

When applied for,

When received,

Committee's Minute

GLASGOW 25 OCT 1921

Assigned

See G.R. Rpt. 17901



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Foundation