

# REPORT ON MACHINERY.

No. 4804

Received at London Office SAT. 25 JUN 1921

MANCHESTER.

of writing Report 19 When handed in at Local Office 24. 6. 1921 Port of

in Survey held at Manchester Date, First Survey 11<sup>th</sup> Jan 1920. Last Survey 7<sup>th</sup> July 1921

Book. on the H.P. & L.P. TURBINE SPINDLES, WHEELS, BLADING & D.R. GEARS. (Number of Visits 22) Tons { Gross Net

ter Built at Manchester By whom built Metropolitan Traction Co. Ltd. when made 1921

ines made at Manchester By whom made when made

ers made at Owners Port belonging to

istered Horse Power Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted

ft Horse Power at Full Power 5,500

BINE ENGINES, &c.—Description of Engines RATEAU IMPULSE TURBINES. No. of Turbines TWO.

eter of Rotor Shaft Journals, H.P. 4 1/2" L.P. 4 1/2" Diameter of Pinion Shaft 1 3/8" (2nd drive) 2 1/2" 1 3/8"

eter of Journals 1 1/2" 2 1/2" 1 3/8" Distance between Centres of Bearings 1 3/8" 1 3/8" Diameter of Pitch Circle 1 3/8" 2 1/2" 2 1/2" 2 1/2"

eter of Wheel Shaft 1 1/2" 2 1/2" 1 3/8" Distance between Centres of Bearings 1 3/8" 2 1/2" 7 9" Diameter of Pitch Circle of Wheel 1 3/8" 2 1/2" 2 1/2" 2 1/2"

th of Face 1 3/8" 2 1/2" 1 3/8" Diameter of Thrust Shaft under Collars Diameter of Tunnel Shaft as per rule as fitted

of Screw Shafts Diameter of same as per rule as fitted Diameter of Propeller Pitch of Propeller

of Blades State whether Moveable Total Surface Diameter of Rotor Drum, H.P. L.P. Astern

ickness at Bottom of Groove, H.P. L.P. Astern Revs. per Minute at Full Power, Turbine 3180 Propeller 90

## PARTICULARS OF BLADING.

WHEEL.	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.
EXPANSION	1 1/8" x 2 1/4"	3' 2 3/8" x 10' 2"	2	2 3/8"	3' 4 3/8"	1	H.P.		
"	1 3/8"	3' 2 3/8"	1	2 1/2"	3' 4 3/8"	1	2' 4 3/8"	3' 3 3/8" x 3' 4 1/2"	2
"	1"	3' 3"	1	4"	3' 6"	1	L.P.		
"	1 1/8"	3' 3 3/8"	1	5 3/8"	3' 7 3/8"	1	3'	3' 1"	1
"	1 3/8"	3' 3 3/8"	1	6 3/8"	3' 8 3/8"	1	5 7/8"	3' 8 3/8"	1
"				8 1/4"	3' 10 1/4"	1			
"				10 3/8"	4' 0 3/8"	1			

o. and size of Feed pumps

o. and size of Bilge pumps

o. and size of Bilge suction in Engine Room

In Holds, &c.

o. of Bilge Injections sizes Connected to condenser, or to circulating pump Is a separate Donkey Suction fitted in Engine Room & size

re all the bilge suction pipes fitted with roses Are the roses in Engine room always accessible

re all connections with the sea direct on the skin of the ship Are they Valves or Cocks

re 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

re 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

re all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times

re the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges

s the Screw Shaft Tunnel watertight Is it fitted with a watertight door worked from

## OILERS, &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 plates No. and Description of Furnaces in each Boiler Material Outside diameter

Length of plain part top Thickness of plates 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

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 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 Steam dome: description of joint to shell 1/10 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

W104-0222



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:— *Turbines:— One set (See) spare thrust parts (Mitchell)*

*Spares: 2 Bolts (or studs) + nuts for each side of Gear Bearing.  
 1 - 2 1/2" Bolts (or studs) of the total number for each Gear Case joint.  
 2 sets of 17 1/2" x 13" Main Shaft Bearing bushes.  
 2 " - 13" x 16" Intermediate " " 1-High speed pinion  
 1 " - 4 1/2" x 9" Bearing (steady)  
 2 " - 6" x 12" High speed bearing  
 2 " - 6" x 6" H.S. Pinion steady bearing*

The foregoing is a correct description,

METROPOLITAN-VICKERS ELECTRICAL CO. LTD.

Manufacturer.

*J. Simpson*

Dates of Survey while building { During progress of work in shops -- *July 15, Jan. 11, 17, 20, Feb 8, 17, 24, Dec 6, 1920, Jan 4, 31, Feb 4, 11, Mar 4, 18, 28, May 11, 14, 23, JUN 1*  
 { During erection on board vessel --- *Total visits = 28*  
 Total No. of visits \_\_\_\_\_

Is the approved plan of main boiler forwarded herewith \_\_\_\_\_

Is the approved plan of donkey boiler forwarded herewith \_\_\_\_\_

Dates of Examination of principal parts—Casings \_\_\_\_\_ Rotors *28.4.21* Blading *31.1.21* Gearing *3.6.21*  
 Rotor shaft *15.7.20* 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 fired \_\_\_\_\_ Engines tried under steam \_\_\_\_\_  
 Main boiler safety valves adjusted \_\_\_\_\_ Thickness of adjusting washers \_\_\_\_\_  
 Material and tensile strength of Rotor shaft *Forged mild steel, 8 1/2" dia x 20" long* Identification Mark on Do. *HP 4889, LP 4886*  
 Material and tensile strength of Pinion shaft *Nickel steel, 4 1/2" dia x 14 1/2" long* Identification Mark on Do. *11065, 11066*  
 Material of Wheel shaft *Tridax* Identification Mark on Do. *D.M.C.* 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, &c. *These spindles, wheels, blading & D.R. gears have been built under Special Survey & the materials used in accordance with the Rules of this Society. The workmanship so far as could be seen all round is good and eligible in my opinion to be classed with record & H.M.C. This machinery has been forwarded to Newcastle.*

Marks on coupling of main shaft.

LLOYDS.  
7.6.21  
D.M.C.

The amount of Entry Fee *As Recd 4/1/21* £ 35 : 8 : 0  
 Special ... £ : :  
 Donkey Boiler Fee ... £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, \_\_\_\_\_ 19\_\_\_\_  
 When received, *18/9/21* 19\_\_\_\_

*J. Simpson*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 27 SEP. 1921

Assigned \_\_\_\_\_



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 Foundation

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