

REPORT ON STEAM TURBINE MACHINERY.

Received at London Office 20 FEB 1930

Date of writing Report 19th Feb. 1930. When handed in at Local Office 19th Feb. 1930. Port of Manchester
No. in Survey held at Manchester Date, First Survey 9th August 1929 Last Survey 14th Feb. 1930
Reg. Book. on the S.S. "City of Barcelona" (Number of Visits)
Built at Glasgow By whom built Barclay Curle & Co. Yard No. 636 When built
Engines made at Manchester By whom made Metropolitan Vickers Technical Engine No. 2660 When made 1920.
Boilers made at By whom made Boiler No. When made
Shaft Horse Power at Full Power 990 Owners Port belonging to
Nom. Horse Power as per Rule 165 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted

EXHAUST

STEAM TURBINE ENGINES, &c.—Description of Engines

Metro. Vickers Plateau Exhaust Turbine

No. of Turbines

Ahead. One

Aster. ✓

Direct coupled, single or double reduction geared to Generator propelling shafts. No. of primary pinions to each set of reduction gearing One gear Direct coupled to ✓ phase
Direct periods per second, Alternating Current Generator rated 800 Kilowatts 450 Volts at 1000 revolutions per minute; for supplying power for driving
One Auxiliary Propelling Motor. Propelling Motor, Type Forced Ventilated Shunt Wound Direct Current
rated 990 SHP 450 Volts at 47.6 revolutions per minute. Direct coupled, single or double reduction geared to main propelling shafts.

PARTICULARS OF TURBINE BLADING.

	Effective H.P.			I.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.
1ST EXPANSION	2 15/16"	38 1/4"	1									
2ND	4"	39 1/2"	1									
3RD	5 3/4"	41 1/4"	1									
4TH	7"	43"	1									
5TH	8 1/2"	45"	1									
6TH	9 3/4"	47 1/2"	1									
7TH												
8TH												

Shaft Horse Power at turbine 1173 Revolutions per minute, at full power, of Turbine Shaft 3000 1st reduction wheel 1000
main shaft 47.6 Pitch Circle Diameter, 1st pinion 8.9173 2nd pinion 1st reduction wheel main wheel 26.9641
Width of Face, 1st reduction wheel main wheel 13" (Two 6 1/2") Distance between centres of pinion and wheel faces and the centre of the adjacent bearings,
1st pinion 13 5/8" 2nd pinion 1st reduction wheel main wheel 14 1/2" Flexible Pinion Shafts, diameter 1st 3" 2nd
Pinion Shafts, diameter at bearings External 1st 5" 2nd diameter at bottom of teeth of pinion 1st 8.3407" 2nd
Internal 1st 3 1/2" 2nd
Wheel Shafts, diameter at bearings, 1st main 6" diameter at wheel shroud, 1st main 8"
Generator Shafts, diameter at bearings 4 1/2" Propelling Motor Shaft, diameter at bearings 15"

Main Shafting, diameter of Tunnel Shafting as per rule as fitted diameter of Thrust Shafting as per rule as fitted 15 1/2" at bearings to 14.78"
diameter of Screw Shaft as per rule 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 watertight 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 Is an approved appliance fitted at the after end of the shaft to permit of it being efficiently

lubricated Length of Stern Bush Diameter of Propeller
Pitch of Propeller No. of Blades State whether Moveable Total Surface square feet. If Single Screw, are

arrangements made so that steam can be led direct to the L.P. Turbine, and either the H.P. or I.P. Turbine can exhaust direct to the Condenser

No. of Turbines fitted with astern wheels Total number of power driven Main and Auxiliary Pumps

No. and size of Feed Pumps How driven No. and size of Pumps connected to the Main Bilge Line

How driven No. and size of Ballast Pumps No. and size of Lubricating Oil Pumps, including

Spare Pump Are two independent means arranged for circulating water through the Oil Cooler No. and size of suction

connected to both Main Bilge Pumps and Auxiliary Bilge Pumps;—In Engine and Boiler Room and in Holds, &c.

No. and size of Main Water Circulating Pump Bilge Suctions No. and size of Donkey Pump Direct Suctions

to the Engine Room Bilges Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes

Are the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges

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

That 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

Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one

compartment to another Is the Screw Shaft Tunnel watertight Is it fitted with a watertight door worked from

WILERS, &c.—(Letter for record) Total Heating Surface of Boilers

Forced Draft fitted No. and Description of Boilers Working Pressure

Is a Report on Main Boilers now forwarded?

Is a Donkey Boiler fitted?

If so, is a report now forwarded?

Plans. Are approved plans forwarded herewith for Shafting
(If not state date of approval)

Spare Gear. State the articles supplied:— Turbine One bearing for each size fitted. One set of springs for safety governor.

One set of springs for relief valve. One set of Thrust Pads.
Leads One bearing for each size fitted. One Pass Valve & Isolating Valve. One set of springs for bypass valve.
One set of springs for isolating valve. One set of springs for trip valve. Spider One brace of Brushes & holders.
Generator One line of brushes & brush holders. One bearing bush of each type.
Main Propulsion Motor One line of Brushes & holders. San Motor One armature. One series field coil. One Interp.
One set of bearings. One line of brushholders. Switch & Control Gear Miscellaneous contacts, springs, fuses, etc.

The foregoing is a correct description,

METROPOLITAN-VICKERS ELECTRICAL CO., LTD.

Manufacturer.

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

Dates of Examination of principal parts—Casings 6-9-29 & 3-10-29 Rotors 1-10-29 & 6-12-29 Blading 17-10-29 & 24-10-29 Gearing 3-10-29 & 6-12-29

Wheel shaft 4-9-29 Thrust shaft 1-10-29 Tunnel shafts ✓ Screw shaft ✓ Propeller ✓

Stern tube ✓ 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 steel 36.4 tons Identification Mark on Do. 2035 R

Material and tensile strength of Flexible Pinion Shaft Forged steel 50.0 tons Identification Mark on Do. 2111 R

Material and tensile strength of Pinion shaft Nickel steel 44.2 & 45.5 tons Identification Mark on Do. 173 S

Material and tensile strength of Reduction Wheel Shaft Forged steel 38.0 tons Identification Mark on Do. 2111 S

Material of Thrust shaft Forged steel Identification Mark on Do. 2338 R

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

Material of Steam Pipes ✓ Test pressure ✓ Date of test ✓

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 the Rules for carrying and burning oil fuel 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, etc.) The above exhaust steam turbine, generator

& motor have been constructed under special survey in accordance with the approved plans & the ma

workmanship, so far as seen, are sound & good. The shop steam test & subsequent examination found

satisfactory. The generator & motor were tested under full load current & the insulation of same found

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Port of

Continuation of Report No.

MANCHESTER

dated

on the

Metropolitan-Vickers Electrical Co. Ltd.

Turbo-Electric Installation for Barclay, Curle's 886.

Plans herewith:—

Outline of Propulsion Motor.

Motor Yoke.

Gear Forgings.

Turbine Spindle Forging.

Generator Shaft.

Armature Spider for Motor.

Outlines of Generator.

Gear Rotating Element.

Certificates (if required) to be sent to

The Surveyors or requested not to write on or below the space for Committee's Minute

The amount of Entry Fee ... £

Special ... £ 16 : 10

Donkey Boiler ... £

Travelling Expenses (if any) £

When applied for,

19th Feb. 1930

When received,

29.5.30

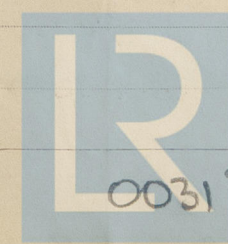
Challis & J. W. Reid.

Engineer Surveyors to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 13 MAY 1930

Assigned See accompanying Report.

General No 50356.



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