

REPORT ON STEAM TURBINE MACHINERY.

Received at London Office 30 SEP 1933

of writing Report 28th Sept. 1933 When handed in at Local Office 29th Sept. 1933 Port of *Manchester*
 in Survey held at *Manchester* Date, First Survey 26th May Last Survey 26th September 1933
 g. Book. 97 on the *Steel Ss. "CITY OF KIMBERLEY"* (Number of Visits 36)
 at *W. Harlepool* By whom built *W. Gray & Co., Ltd* Yard No. *3088* Turbine
 in made at *Manchester* By whom made *Metropolitan Vickers Electrical Co., Ltd* Engine No. *3090* When made *1933*
 lers made at *W. Harlepool* By whom made *Central Marine Eng. Works* Boiler No. *✓* When made *1925*
 Horse Power at Full Power *1000* Owners *Ellerman & Bucknall S.S. Co., Ltd* Port belonging to *London*
 Horse Power as per Rule *167* Is Refrigerating Machinery fitted for cargo purposes *No.* Is Electric Light fitted *Yes*

M TURBINE ENGINES, &c.—Description of Engines

Metro. Vickers Plateau Exhaust Turbine

No. of Turbines

Ahead *One*
Astern *✓*

ected, single or double reduction geared to *Generator propelling shafts*. No. of primary pinions to each set of reduction gearing *One* Seared *✓*
 revolutions per minute; for supplying power for driving
 e Auxiliary Propelling Motors. Propelling Motors, Type *Forced Ventilated Shunt Wound Direct Current*
 200 *HP* 470 Volts at *81* revolutions per minute. Direct coupled, single or double reduction geared to *Main* propelling shaft.

DETAILS OF TURBINE BLADING.

	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.
ANSION	5"	38 $\frac{1}{4}$ "	1									
"	6 $\frac{3}{8}$ "	40 $\frac{3}{4}$ "	1									
"	7 $\frac{1}{2}$ "	43"	1									
"	8 $\frac{1}{2}$ "	45"	1									
"	9 $\frac{3}{4}$ "	47 $\frac{1}{2}$ "	1									
"	11"	50"	1									

Horse Power at *each turbine* *1210* Revolutions per minute, at full power, of *each Turbine Shaft* *3000* *reduction wheel* *750*
81 Pitch Circle Diameter, *1st pinion* *8.3555"* *2nd pinion* *✓* *1st reduction wheel* *✓* *main wheel* *33.6363"*
 Face, *1st reduction wheel* *✓* *main wheel* *20" (Over 10")* Distance between centres of pinion and wheel faces and the centre of the adjacent bearings.
1.5 $\frac{1}{8}$ " *2nd pinion* *✓* *1st reduction wheel* *✓* *main wheel* *1.5 $\frac{1}{2}$ "* Flexible Pinion Shafts, diameter *1st* *3 $\frac{1}{2}$ "* *2nd* *✓*
 shafts, diameter at bearings External *1st* *6"* *2nd* *✓* diameter at bottom of teeth of pinion *1st* *7.7789"* *2nd* *✓*
 Internal *1st* *4"* *2nd* *✓*
 shafts, diameter at bearings, *1st* *✓* *main* *7"* *✓* diameter at wheel shroud, *1st* *✓* *main* *8 $\frac{3}{8}$ -9"*
 or Shafts, diameter at bearings *6" at driving end* *✓* Propelling Motor Shafts, diameter at bearings *15"* *✓*
 shafting, diameter of Tunnel Shafting as per rule *✓* as fitted *✓* diameter of Thrust Shafting as per rule *15.25"* as fitted *✓*
 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

straight 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
 in 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
 and or protected between the liners Is an approved appliance fitted at the after end of the shaft to permit of it being efficiently

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

nts 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
 turbines fitted with astern wheels Total number of power driven Main and Auxiliary Pumps

size of Feed Pumps How driven No. and size of Pumps connected to the Main Bilge Line
 No. and size of Ballast Pumps No. and size of Lubricating Oil Pumps, including

Are two independent means arranged for circulating water through the Oil Cooler No. and size of suction
 to both Main Bilge Pumps and Auxiliary Bilge Pumps:—In Engine and Boiler Room and in Holds, &c.

size of Main Water Circulating Pump Bilge Suctions No. and size of Donkey Pump Direct Suctions
 in Room Bilges Are all the bilge suction pipes in holds and tunnel well fitted with strum-bones

lge Suctions in the Machinery Space led from easily accessible head-boxes, placed above the level of the working floor, with straight tail pipes to the bilges
 nections with the sea direct on the skin of the ship Are they Valves or Cocks

red 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
 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

are carried through the bunkers How are they protected
 es, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times

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

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

ced 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 ²⁻⁵⁻³³ ²⁻⁶⁻³³ ¹⁷⁻⁶⁻³³ ²⁶⁻⁷⁻³³ ^{Approved} Main Boilers ☒

Auxiliary Boilers ☒

Donkey Boilers ☒

(If not state date of approval)

Spare Gear.

State the articles supplied: Turbine:- 1 complete set of bearing bushes for rotor shaft. 1 set of pads for thrust block.

1 set of springs for relief valves. 1 set of springs for bye-pass valve, isolating valve, safety governor & trip valve.

Generator:- 1 set of bearing bushes for both bearings. 10 armature coils. 1 complete set of brushes & brush holders.

Motor:- 1 complete set of brushes. 10 armature coils. Gearing:- 1 wheel bearing. 1 pinion bearing.

Lubricating Oil Pump:- 1 set of wheels for valveless pump. 1 complete set of suction & delivery valves for standby pump.

Switchgear:- 1 set of control switch contact tips. 1 spring of each size fitted. 1 set of spare fuses of each size fitted. 1 reel of each size of fuse wire fitted.

The foregoing is a correct description,

METROPOLITAN STEEL CO. LTD

Manufacturer.

Dates of Survey while building ^{During progress of work in shops - -} ^{During erection on board vessel - - -} ^{Total No. of visits} May 26, June 1-6, 12, 16, 17, 21, 26, 27, July 1, 4, 7, 11, 18, 19, 24, 28, Aug. 10, 18, 22, 29, 30, 31, Sept. 1, 4, 5, 6, 7, 8, 12, 13, 14, 16, 26

Dates of Examination of principal parts—Casings 10-8-33 Rotors 13-9-33 Blading 28-8-33-30-8-33 Gearing 30-8-33

Wheel shaft 19-7-33 Thrust shaft 10-8-33 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 37.3 Tons Identification Mark on Do. MF663-28-8-33 AS

Material and tensile strength of Flexible Pinion Shaft Forged Nickel Steel 48.2 Tons 48.1 Tons Identification Mark on Do. 9323-2822-258-33 GA

Material and tensile strength of Pinion shaft Forged Nickel Steel 44.6 - 44.4 - 45.2 Tons Identification Mark on Do. 9288-783-30-8-33 AS

Material and tensile strength of Reduction Wheel Shaft Forged Steel 35.15 Tons Identification Mark on Do. MF667-19-7-33 AS

Material of ~~Wheel~~ ^{Motor} shaft Forged Steel 4551-7861 Identification Mark on Do. 24-7-33 AS Material of Thrust shaft Forged Steel Identification Mark on Do. 4550-7860 10-8-33 A

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

Material of Steam Pipes ☒ Test pressure ☒ Date of tests ☒

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 ☒ Turbine a duplicate of City of Singapore etc.

Is this machinery a duplicate of a previous case ☒ If so, state name of vessel Gears a duplicate of City of Venice, etc.

General Remarks (State quality of workmanship, opinions as to class, etc.)

The foregoing exhaust steam turbine, gears, generator & motor have been constructed under Special Survey in accordance with the approved plans.

The materials & workmanship, so far as seen, are sound & good. The generator & motor were run for six hours with full load current, testing & commutation satisfactory. Insulation & pressure tests also made & found satisfactory. Switchgear pressure tested & found in order.

The machinery has been despatched to Belfast for fitting on board the vessel.

Turbine casing marked 3088 LLOYDS 16-9-33 AS. Gear casing marked 3090 LLOYDS 16-9-33 AS.

Generator yoke marked LLOYDS 31-8-33 R.C.C. Motor yoke marked 8-9-33 R.C.C.

The amount of Entry Fee ... £

When applied for.

Special

(Credit Belfast 16-13-4) £ 50 0

29-8-33

Donkey Boiler Fee ... £

When received.

Div. Travelling Expenses (if any) £ 2 1 0

14-12-33

Committee's Minute

FRI. 8 DEC 1933

Assigned

See Bel. Rpt. 11175

Charles & R. C. Clayton

Engineer Surveyor to Lloyd's Register of Shipping.



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