

EXHAUST

No. 7884

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
 on the Steel S.S. "CITY OF KIMBERLEY" (Number of Visits 36)

at W. Harlepool By whom built W. Gray & Co., Ltd Yard No. 3088 When built 1925-4
 made at Manchester By whom made Metropolitan Vickers Electrical Co., Ltd Engine No. 3090 When made 1933
 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

STEAM TURBINE ENGINES, &c.—Description of Engines Metro. Vickers Steam Exhaust Turbine No. of Turbines One Ahead One
 single or double reduction geared to Generator propelling shafts. No. of primary pinions to each set of reduction gearing One Seared ✓
 Alternating Current Generator rated 820 Kilowatts 470 Volts at 750 revolutions per minute; for supplying power for driving
 Auxiliary Propelling Motors. Propelling Motors, Type Forced Ventilated Shunt Wound Direct Current
200 ^{SHP} 470 Volts at 81 revolutions per minute. Direct coupled, single or double reduction geared to Main propelling shaft.

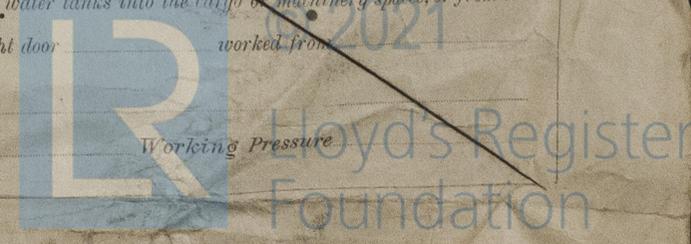
DETAILS OF TURBINE BLADING.

Effective H.P.	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.
	5"	38 1/4"	1									
	6 3/8"	40 3/4"	1									
	7 1/2"	43"	1									
	8 1/2"	45"	1									
	9 3/4"	47 1/2"	1									
	11"	50"	1									

Horse Power at each turbine 1210 Revolutions per minute, at full power, of 3000 Turbine Shaft 750 reduction wheel
81 Pitch Circle Diameter, 1st pinion 8.3555" 2nd pinion ✓ 1st reduction wheel ✓ main wheel 33.6363"
 Face, 1st reduction wheel ✓ main wheel 20" (Two 10") Distance between centres of pinion and wheel faces and the centre of the adjacent bearings,
1-5 1/8" 2nd pinion ✓ 1st reduction wheel ✓ main wheel 1-5 1/2" Flexible Pinion Shafts, diameter 1st 3 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 7/8-9"
 Propeller Shafts, diameter at bearings 6" at driving end Propelling Motor Shafts, diameter at bearings 15"
 Shafting, diameter of Tunnel Shafting as per rule ✓ diameter of Thrust Shafting as per rule 15.25"
 as fitted ✓ 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
 end 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
 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
 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 the Room Bilges Are all the bilge suction pipes in holds and tunnel well fitted with strum-bones
 Bilge 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
 connections with the sea direct on the skin of the ship Are they Valves or Cocks
 raised 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
 Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times
 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
 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 Working Pressure
 Draft fitted No. and Description of Boilers



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 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 - - 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, 25, 28, 30, 31, Sept. 1, 4, 5, 6, 7, 8, 12, 13, 14, 16, 26
During erection on board vessel - - -
Total No. of visits:

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 fixed ✓ 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: Marks 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: Marks 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: Marks on Do. 9288-783-30-8-33 AS
Material and tensile strength of Reduction Wheel Shaft Forged steel 35.15 Tons Identification: Marks on Do. MF667-19-7-33 AS
Material of Motor shaft Forged steel Identification: Mark on Do. 4551-7861 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 ✓
Is this machinery a duplicate of a previous case? If so, state name of vessel: Turbine a duplicate of 'City of Singapore' etc. 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 ... £ : :
Special (Credit Belfast 16-13-4) ... £ 50 0 : :
Donkey Boiler Fee ... £ : :
Travelling Expenses (if any) ... £ 2 1 0 : :
When applied for: 29th Sept 1933
When received: 14.12.33

Charles & R. C. Clayton
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute: Fri. 8 Dec 1933
Assigned: See Bel. Rpt. 11175

