

EXHAUST REPORT ON STEAM TURBINE MACHINERY.

No. 7842

1 AUG 1933

Received at London Office

Date of writing Report 31st July 1933 When handed in at Local Office 31st July 1933 Port of Manchester
 No. in Survey held at Manchester Date, First Survey 16th May Last Survey 25th July 1933
 Reg. Book. 33756 on the Steel S.S. "CITY OF VENICE" (Number of Visits 26)
 Tons { Gross 8308
 Net 5223
 Built at Belfast By whom built Workman Clark & Co. Ltd Yard No. 3079 When built 1924-4
 Engines made at Manchester By whom made Metropolitan Vickers Electrical Co. Ltd Engine No. 3080 When made 1933
 Boilers made at Belfast By whom made Workman Clark & Co. Ltd Boiler No. ✓ When made 1924
 Shaft Horse Power at Full Power 1400 Owners Ellerman Lines, Ltd Port belonging to Glasgow
 Nom. Horse Power as per Rule 233 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

EXHAUST STEAM TURBINE ENGINES, &c.—Description of Engines Wolfe Vickers Patent Exhaust Turbine No. of Turbines Ahead One Astern ✓
 Direct coupled, single or double reduction geared to main propelling shaft. No. of primary pinions to reduction reduction gearing One GEARED direct coupled to ✓ phase
 Direct One Auxiliary periods per second, Alternating Current Generator rated 1155 Kilowatts 455 Volts at 750 revolutions per minute; for supplying power for driving
 Propelling Motor, Type Forced Ventilated Hunt Wound Direct Current
 rated 1400 Kilowatts 455 Volts at 89 revolutions per minute. Direct coupled, single or double reduction geared to Main propelling shaft.

PARTICULARS OF TURBINE BLADING.

STAGE	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	6 3/8"	40 1/4"										
2nd	7 1/2"	43"										
3rd	8 1/2"	45"										
4th	9 3/4"	47 1/2"										
5th	11"	50"										

Shaft Horse Power at each turbine 1680 Revolutions per minute, at full power, of main Turbine Shaft 3000 1st reduction wheel 750
 Motor 89 Pitch Circle Diameter, 1st pinion 8.3555 2nd pinion ✓ 1st reduction wheel ✓ main wheel 33.6363
 Width of Face, 1st reduction wheel ✓ main wheel 20" (See 10") Distance between centres of pinion and wheel faces and the centre of the adjacent bearings,
 1st pinion 1'-5 1/8" 2nd pinion ✓ 1st reduction wheel ✓ main wheel 1'-5 1/2" Flexible Pinion Shafts, diameter 3 1/2" 2nd ✓
 Pinion Shaft, diameter at bearings External 1st 6" 2nd ✓ diameter at bottom of teeth of pinion 7.7789" 2nd ✓
 Internal 1st 4" 2nd ✓
 Wheel Shaft, diameter at bearings, 1st ✓ main 7" diameter at wheel shroud, 1st ✓ main 8 3/8" - 9"
 Generator Shaft, diameter at bearings 6" Propelling Motor Shaft, diameter at bearings 16"
 Main Shafting, diameter of Tunnel Shafting as per rule ✓ diameter of Thrust Shafting as per rule ✓
 as fitted ✓ as fitted ✓
 Diameter of Screw Shaft as per rule ✓ Is the screw shaft fitted with a continuous liner the whole length of the stern tube ✓ Is the after end of the liner
 as fitted ✓ If the liner is in more than one length are the joints burned ✓ If the liner does not fit tightly at the
 the watertight in the propeller boss ✓ 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
 it lapped or protected between the liners ✓ Is an approved appliance fitted at the after end of the shaft to permit of it being efficiently
 indicated Length of Stern Bush Diameter of Propeller
 No. 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
 of Turbines fitted with astern wheels Total number of power driven Main and Auxiliary Pumps
 and size of Feed Pumps How driven No. and size of Pumps connected to the Main Bilge Line
 driven No. and size of Ballast Pumps No. and size of Lubricating Oil Pumps, including
 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.
 and size of Main Water Circulating Pump Bilge Suctions No. and size of Donkey Pump Direct Suctions
 Engine Room Bilges Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes
 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
 All connections with the sea direct on the skin of the ship Are they Valves or Cocks
 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
 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
 pipes are carried through the bunkers How are they protected
 Pipes, 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
 ment 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
 Dred Draft fitted No. and Description of Boilers



W236-0082

Is a Report on Main Boilers now forwarded?

Is a Donkey Boiler fitted?

If so, is a report now forwarded?

Plans. Approved plans forwarded herewith for Shafting Main Boilers Auxiliary Boilers Donkey Boilers
(If not state date of approval)

Spare Gear. State the articles supplied:— Turbine: 1 complete set of pads for thrust block. 1 set of springs for relief valves. 1 complete set of bearing bushes for rotor shaft. 1 set of springs for bypass 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. Rotor: 1 complete set of brushes. 10 armature coils. Bearing: 1 wheel bearing. 1 pinion bearing. Lubricating Oil Pump: 1 set of wheels for valves pump. 1 complete set of suction & delivery valves for standby pump. Switchgear: 1 set of control, switch contact dips. 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-VICKERS ELECTRICAL CO. LTD

C. G. D. N.

Manufacturer.

Dates of Survey while building: During progress of work in shops -- May 16, 22, 30. June 1, 2, 6, 14, 16, 19, 20, 21, 26, 27. July 1, 4, 7, 10, 11, 12, 19, 21, 24, 23, 25, 26, 28. During erection on board vessel --- Total No. of visits

Dates of Examination of principal parts: Casings 4-7-33 Rotor 24-7-33 Blading 10-7-33-13-7-33 Gearing 21-7-33

Wheel shaft 19-7-33 Thrust shaft ✓ 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 34.8 Tons. Identification Mark on Do. 11-7-33 AS MF 633

Material and tensile strength of Flexible Pinion Shaft Forged Nickel Steel 54.0 Tons. Identification Mark on Do. 21-7-33 AS 58916

Material and tensile strength of Pinion shaft Forged Nickel Steel 45.3 Tons. 45.0 Tons. Identification Mark on Do. 21-7-33 AS 58914

Material and tensile strength of Reduction Wheel Shaft Forged steel 34.85 Tons. Identification Mark on Do. 19-7-33 AS MF 651

Material of Motor shaft Forged steel Identification Mark on Do. 3-7-33 AS 723-59130 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 ✓ 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 ✓ If so, state name of vessel Turbine a duplicate of City of Canberra
Gear a duplicate of City of Hong Kong

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

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

The materials & workmanship, so far as seen, are sound and good.

The Generator and Motor were run for six hours on short circuit with full load current, heating & commutation found satisfactory. Insulation and pressure tests made.

Switch gear pressure tested & found in order.

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

Turbine casing marked 3079 LLOYDS 28-7-33 AS Gear casing marked 3080 LLOYDS 28-7-33 AS.

The amount of Entry Fee ... £ 70 : 0 : 0 When applied for, (Credit Belfast) (23 : 6 : 8) 19. *AMW*

Donkey Boiler Fee ... £ When received, *R. C. Clayton*
Engineer Surveyor to Lloyd's Register of Shipping.

Travelling Expenses (if any) ... £ 3 : 6 : 0 24/11/33 *Ed*

Committee's Minute FRI. 20 OCT 1933 TUE. 23 JAN 1934

Assigned FRI. 19 OCT 1934



Certificate (if required) to be sent to... (The Surveyors are requested to fill in the space for Committee's Minute.)