

ELECTRIC GENERATING

REPORT ON STEAM TURBINE MACHINERY.

No. 104735

Rpt. 4a.

Date of writing Report 27 July 1937

5 AUG 1937

Port of London

Received at London Office 5 AUG 1937

No. in Survey held at Rugby

Date, First Survey 12 March 1937 Last Survey 2 July 1937

Reg. Book.

on the Twin S.S. 'City of Cape Town'

(Number of Visits 9)

Tons Gross Net

Built at Birkenhead.

By whom built Cammell Laird & Co. Ltd.

Yard No. 1023 When built 1937.

Auxiliary Engines made at Rugby.

By whom made B.T.H. Co. Ltd.

TURBINE R 1932 R 1933

Generators made at Rugby.

By whom made B.T.H. Co. Ltd.

ENGINE Nos R 1934

Shaft Horse Power at Full Power 675

Owners The Ellerman Lines Ltd

GENERATOR SR 58331

Boiler Nos R 58332 R 58333

Nom. Horse Power as per Rule 112.5

Is Refrigerating Machinery fitted for cargo purposes No

Is Electric Light fitted Yes

Trade for which Vessel is intended

STEAM TURBINE ENGINES, &c.—Description of Engines Three—150 kW Turbo-electric generating sets.

No. of Turbines 3 (1 per set) Direct coupled, single reduction geared to generator, propelling shafts. No. of primary pinions to each set of reduction gearing 1. direct coupled to Alternating Current Generator phase periods per second each rated 150 Kilowatts 220 Volts at 800 revolutions per minute; for supplying power for driving and lighting Propelling Motors, Type rated Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

Table with columns: TURBINE BLADING, H.P., I.P., L.P., ASTERN. Rows include 1st Expansion, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th. Columns include Height of Blades, Diameter at Tip, No. of Rows.

Shaft Horse Power at each turbine H.P. 225 I.P. 6500 L.P. 800. Revolutions per minute, at full power, of each Turbine Shaft 1st reduction wheel main shaft Generator. 800

Rotor Shaft diameter at journals H.P. and 1.75" I.P. Pitch Circle Diameter 1st pinion 2.6245" 1st reduction wheel 2nd pinion main wheel 21.3894" Width of Face 1st reduction wheel main wheel 4" x 2 = 8"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 7" and 8" 1st reduction wheel 2nd pinion main wheel 7" and 8"

Flexible Pinion Shafts, diameter 1st 2nd Pinion Shafts, diameter at bearings both External 2 1/4" 2nd diameter at bottom of pinion teeth 1st 2.3429" 2nd

Wheel Shafts, diameter at bearings both 1st 3 3/4" diameter at wheel shroud, 1st Generator Shaft, diameter at bearings 4" main Propelling Motor Shaft, diameter at bearings

Intermediate Shafts, diameter as per rule as fitted Thrust Shaft, diameter at collars as per rule as fitted

Tube Shaft, diameter as per rule as fitted Screw Shaft, diameter as per rule as fitted Is the tube screw shaft fitted with a continuous liner

Bronze Liners, thickness in way of bushes as per rule as fitted Thickness between bushes as per rule as fitted Is the after end of the liner made watertight in the propeller boss If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner

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 Oil Gland or other appliance fitted at the after end of the tube shaft If so, state type Length of Bearing in Stern Bush next to and supporting propeller

Propeller, diameter Pitch No. of Blades State whether Moveable Total Developed Surface square feet. If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Can the H.P. or I.P. Turbine exhaust direct to the

Condenser No. of Turbines fitted with astern wheels Feed Pumps No. and size How driven

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

Are two independent means arranged for circulating water through the Oil Cooler Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room In Pump Room

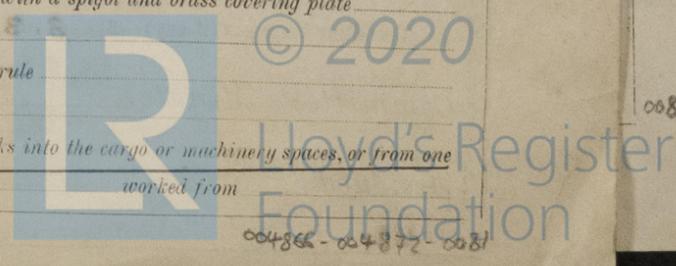
Main Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes

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 Sea Connections fitted direct on the skin of the ship Are they fitted with Valves or Cocks

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Overboard Discharges 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

What pipes pass through the bunkers How are they protected Have they been tested as per rule What pipes pass through the deep tanks 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 Shaft Tunnel watertight Is it fitted with a watertight door worked from



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

Is 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? _____
 (an Auxiliary)

Is the donkey boiler intended to be used for domestic purposes only _____

Plans. Are approved plans forwarded herewith for Shafting **5-1-37** Main Boilers _____ Auxiliary Boilers _____ Donkey Boilers _____
 (If not state date of approval)

Superheaters _____ General Pumping Arrangements _____ Oil Fuel Burning Arrangements _____

SPARE GEAR.

Has the spare gear required by the Rules been supplied **Yes**

State the principal additional spare gear supplied **1 set of turbine, gears and generator bearings, 1 set of gland packings, 1 set of carbon brushes, 1 brush spindle, 1 set brush springs, 1 set governor springs.**

THE BRITISH THOMSON-HOUSTON CO., LTD.

Manufacturer.

The foregoing is a correct description,

per **H.R. Manning**

Dates of Survey while building { During progress of work in shops --- } **1937. Mch 12, May 19, 31 Jun. 10, 15, 18, 22, 24 July 2.** = 9 Visits
 { During erection on board vessel --- }
 Total No. of visits _____

Dates of Examination of principal parts—Casings **31-5-37, 10-6-37** Rotors **5-5-37 1/2** Blading **10-6-37 1/2 2-7-37** Gearing **5-5-37 1/2**

Wheel shafts **12-3-37, 1/2 12-6-37** Thrust shaft _____ Intermediate shafts _____ Tube shaft _____ Screw shaft _____

Propeller _____ Stern tube _____ Engine and boiler seatings _____ Engine holding down bolts _____

Completion of fitting sea connections _____ Completion of pumping arrangements _____ Boilers fired _____ Engines tried under steam _____

Main boiler safety valves adjusted _____ Thickness of adjusting washers _____

Rotor shaft, Material and tensile strength **9.0 Steel. 41.72 t^m 23% - 42.52 t^m 24% - 40.08 t^m 26%** Identification Mark **723 and 124, 125, 127**

Flexible Pinion Shaft, Material and tensile strength _____ Identification Mark _____

Pinion shaft, Material and tensile strength **Nickel Steel 51.16 t^m 23.5% 50.8 t^m 23% 48.0 t^m 24%** Identification Mark **726/118, 179/143, 742/144**

1st Reduction Wheel Shaft, Material and tensile strength _____ Identification Mark _____

Wheel shaft, Material **9.0 Steel** Identification Mark **672/111, 672/112** Thrust shaft, Material _____ Identification Mark _____

Intermediate shafts, Material _____ Identification Marks _____ Tube shaft, Material _____ Identification Marks _____

Screw shaft, Material _____ Identification Marks _____ Steam Pipes, Material _____ 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 the use of oil as fuel been complied with _____

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo _____ If so, have the requirements of the Rules been complied with _____

If the notation for ice strengthening is desired, state whether the requirements in this respect have 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, &c.) **Workmanship good.**

These three turbo electric generating sets have been specially surveyed during construction and are in accordance with the approved plan and the rules. The materials used have been made at works approved by the Committee & tested by the Surveyors to this Society. Full power, over speed, governing & trip gear tests were witnessed in the shop & all worked satisfactorily. They have now been dispatched to Birkenhead for fitting onboard.

The above have been satisfactorily fitted on board and examined under full working conditions.

Attached hereto: Report 76 on generator 3 m H. List of Stampings Forging certificates being common to both vessels will be attached to report on vessel 10.

112 No 21.	The amount of Entry Fee	... £	
	Special	... £	11.4-0
	Donkey Boiler Fee	... £	
	Travelling Expenses (if any)	£	3.3.9.

When applied for,
5 AUG 1937
 When received,
 11/10/1937

Geo. A. Lang **J. B. Millton**
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute
 Assigned



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