

REPORT ON STEAM TURBINE MACHINERY.

ELECTRIC GENERATING.

No. 103899

t. 4a.

Received at London Office

JUL 21 1937

Date of writing Report 28 Dec. 1936 When handed in at Local Office

4 JAN 1937 Port of London

No. in Survey held at Bedford

Date, First Survey 12 June 1936 Last Survey 21 December 1936

Reg. Book.

Tons } Gross
Net

on the

Built at Barrow By whom built Vickers, Armstrong & Co. Yard No. 712. When built 1936
Engines made at Bedford By whom made W. H. Allen & Co. Ltd Engine No. T/56738. When made 1936.
Boilers made at do By whom made do Boiler No. When made 1936.

Shaft Horse Power at Full Power 820 Owners Orient Steam Navigation Co. Ltd. Port belonging to
Nom. Horse Power as per Rule 136.6 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted yes
Trade for which Vessel is intended Passenger Vessel, Ocean Service

TEAM TURBINE ENGINES, &c. — Description of Engines. Turbo-Generators (3) 500 K.W.

No. of Turbines Ahead Direct coupled, single reduction geared to Generator propelling shafts. No. of primary pinions to each set of reduction gearing 1.
Astern Direct coupled, double reduction geared

Direct coupled to Alternating Current Generator phase periods per second rated 56.0 Kilowatts 220 Volts at 500 revolutions per minute;
Direct Current Generator

for supplying power for driving Propelling Motors, Type

rated Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

TURBINE LOADING.	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 MOV.	5/8"	22 3/4"	1									
2ND " GUIDE	7/8"	23"	1									
3RD " MOV.	1 1/8"	23 1/4"	1									
4TH " 2 1/2"	7/16"	22 7/16"	1									
5TH " 3 1/2"	7/16"	22 7/16"	1									
6TH " 4 1/2"	1/2"	22 5/8"	1									
7TH " 5"	5/8"	22 3/4"	1									
8TH "												
9TH "												
10TH "												
11TH "												
12TH "												

Shaft Horse Power at each turbine H.P. 820 each I.P. 5000 1st reduction wheel
Revolutions per minute, at full power, of each Turbine Shaft I.P. 500 main shaft
L.P. 500

Rotor Shaft diameter at journals H.P. 3 1/2" Pitch Circle Diameter 1st pinion 1st reduction wheel Width of Face 1st reduction wheel
I.P. 4.3478" main wheel 43.6448" main wheel 22 7 1/2"
L.P. 16.5" 1st reduction wheel 18 1/2"

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

Flexible Pinion Shafts, diameter 1st Pinion Shaft, diameter at bearings External 3.76" 2nd diameter at bottom of pinion teeth 3.9888"
2nd TURBO END 5" GEN END 8"

Wheel Shaft, diameter at bearings 1st Generator Shaft, diameter at bearings 7"
2nd Propelling Motor Shaft, diameter at bearings

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

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

Bronze Liners, thickness in way of bushes as per rule Thickness between bushes 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 L.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

In Holds, &c. 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
What pipes pass through the deep tanks Have they been tested as per rule

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?
{ an Auxiliary }

If so, is a report now forwarded?

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

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

Main Boilers

Auxiliary Boilers

Donkey Boilers

Superheaters

General Pumping Arrangements

Oil Fuel Burning Arrangements

SPARE GEAR.

Has the spare gear required by the Rules been supplied

State the principal additional spare gear supplied

The foregoing is a correct description,

For W. H. ALLEN, SON & Co. Ltd.

A. J. H. Fitt

Manufacturer.

Dates of Survey while building { During progress of work in shops -- } 1936 June 12. July 1. Sept 24. 9. Oct: 13. 26. 29. Nov. 4. 11. 27. 30. Dec 7. 15. 18. 21.
{ During erection on board vessel -- }
Total No. of visits

Dates of Examination of principal parts—Casings 4. 9. 36. Rotors 12. 6. 36 18. 11. 36 Blading 29. 9. 36. Gearing 11. 11. 36

Wheel shaft 11. 11. 36 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 fixed ✓ Engines tried under steam ✓

Main boiler safety valves adjusted ✓ Thickness of adjusting washers ✓

Rotor shaft, Material and tensile strength ✓ Identification Mark ✓

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

Pinion shaft, Material and tensile strength ✓ Identification Mark ✓

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

Wheel shaft, Material ✓ Identification Mark ✓ 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 *yes* If so, state name of vessel *Orion*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The turbo generator sets have been constructed under special survey; the materials & workmanship are good & hydraulic pressure tests of 700 lbs. in steam chests & belts, of 170 lbs. in high pressure units and of 50 lbs. in low pressure units of turbine casings were witnessed & stamped accordingly. Each set was examined under full power governing & trip gear tests & found in order. The generators have been dispatched to Barrow for fitting on board & merit, in my opinion, the notation of "ELECTRIC LIGHT" when satisfactory installed & tested in accordance with the requirements of the Rules*

The amount of Entry Fee ... £ : :
12 units @ 2-2-0 ... } £ 29-8-0
Special ... }
4 units @ 1-1-0 ... }
Donkey Boiler Fee ... £ : :
Travelling Expenses (if any) £ 3-9-0

When applied for,

4 JAN 1937

When received,

4/3/37

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE. 27 JUL 1937

Assigned

See Buo 2662



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Lloyd's Register
Foundation