

REPORT ON STEAM TURBINE MACHINERY.

Bel 10,379

No. 49565

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Date of writing Report 29.8.1929 When handed in at Local Office 31.8.1929 Port of Glasgow

No. in Survey held at Dalrum Reg. Book. Date, First Survey 4.4.29 Last Survey 7.8.1929

on the Belfast By whom built Workman Clark & Co. Yard No. 504 When built 1929

Engines made at " By whom made " Engine No. When made

Boilers made at " By whom made " Boiler No. When made

Shaft Horse Power at Full Power 1570 Owners Port belonging to

Nom. Horse Power as per Rule 262 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted

Trade for which Vessel is intended

STEAM TURBINE ENGINES, &c.—Description of Engines

No. of Turbines One Ahead One Direct coupled to Alternating Current Generator phase periods per second Direct Current Generator rated Kilowatts Volts at revolutions per minute; No. of primary pinions to each set of reduction gearing One

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 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.
1ST EXPANSION												
2ND							114"	1178"	1			
3RD							133"	1216"	1			
4TH							150"	1250"	1			
5TH							167"	1284"	1			
6TH							190"	1330"	1			
7TH							213"	1376"	1			
8TH							235"	1420"	1			
9TH												
10TH												
11TH												
12TH												

Shaft Horse Power at each turbine H.P. 1570 I.P. 2780 L.P. 2780 Revolutions per minute, at full power, of each Turbine Shaft 1st reduction wheel 630 main shaft 76.5

Rotor Shaft diameter at journals H.P. 170 I.P. 170 L.P. 170 Pitch Circle Diameter 1st pinion 11.3549" 1st reduction wheel 49.9187" 2nd pinion 15.426" main wheel 120.837" Width of Face 1st reduction wheel 305" main wheel 645"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 315" 1st reduction wheel 360 2nd pinion 525" main wheel 630

Flexible Pinion Shafts, diameter at bearings External 1st 250" 2nd 360" Internal 1st 250" 2nd 360" Pinion Shafts, diameter at bearings External 1st 250" 2nd 360" Internal 1st 250" 2nd 360" diameter at bottom of pinion teeth 1st 11.206" 2nd 15.224"

Wheel Shafts, diameter at bearings 1st 290" 2nd 550" diameter at wheel shroud, 1st 1203" 2nd 2965" Generator Shaft, diameter at bearings 27.3-29 Propelling Motor Shaft, diameter at bearings 16.25/32 Tube Shaft, diameter as per rule as fitted

Intermediate Shafts, diameter as per rule as fitted Thrust Shaft, diameter at collars as per rule as fitted 16.25/32 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 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 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 Funnel 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 Are they tested as per rule 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 or an Auxiliary Boiler fitted? If so, is a report now forwarded?

Plans. Are approved plans forwarded herewith for Shafting Main Boilers Auxiliary Boilers Donkey Boilers

Superheaters General Pumping Arrangements Oil Fuel Burning Arrangements

Spare Gear. State the articles supplied:—

FOR WILLIAM BEARDMORE & CO., LIMITED.

G. Langlands & Co. Manufacturer.

The foregoing is a correct description,

Dates of Survey while building During progress of work in shops -- 1929 Apr 18 29 May 7 13 21 29 June 13 17 25 July 2 25 29 Aug 1 7

Dates of Examination of principal parts—Casings 2-7-29 Rotors 29-7-29 Blading 29-7-29 Gearing 2-7-29

Wheel shaft 2-7-29 Thrust shaft 2-7-29 Intermediate shafts Tube shaft Screw shaft

Propeller Stern tube Engine and boiler seatings Engine holding down bolts

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 S. 35.4 Identification Mark 2898

Flexible Pinion Shaft, Material and tensile strength Identification Mark

Pinion shaft, Material and tensile strength S 44.45 Identification Mark 2898

1st Reduction Wheel Shaft, Material and tensile strength S 36.6 Identification Mark 2898

Wheel shaft, Material S Identification Mark 2898 Thrust shaft, Material S Identification Mark 2898

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 carrying and burning oil fuel been complied with

Is this machinery a duplicate of a previous case If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c. This Low Pressure Turbine with double reduction gearing, and hydraulic coupling has been built under special survey, in accordance with the approved plans, and the Society's Rules and requirements. The materials and workmanship are good.

The installation has been forwarded to Belfast to be fitted on board.

This turbine has been efficiently fastened on board & tried out under steam along with main engines on a sea trial, with satisfactory results.

John K. Williams, Belfast.

Jas. Cairns, Engineer Surveyor to Lloyds Register of Shipping.

The amount of Entry Fee ... £ Special due Glas 17-9-4 1/3 due Belfast 8-14-8 Donkey Boiler Fee ... £ Travelling Expenses (if any) £

When applied for, 2-9-1929 When received, 11-11-1929

Committee's Minute GLASGOW 3-SEP-1929

FRI. 6 JUN 1930

Assigned Transmit to London

Lloyd's Register Foundation