

REPORT ON STEAM TURBINE MACHINERY.

3210.377

No. 49565

Received at London Office - 4 SEP 1929

Date of writing Report **29.8.29** When handed in at Local Office **31.8.29** Port of **Glasgow**

No. in Survey held at **Dalmuir** Date, First Survey **4.4.29** Last Survey **7.8.1929**

Reg. Book. on the **Belfast**

Built at **Belfast** By whom built **Worthman 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 **Bauer Mach Installation, B.W. 15.**

No. of Turbines **One** Ahead **One** Direct **One** to **One** propelling shafts. No. of primary pinions to each set of reduction gearing **One**

direct coupled to { Alternating Current Generator phase periods per second } rated Kilowatts Volts at revolutions per minute;

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 { H.P. **630** I.P. **76.5** L.P. **76.5** }

Rotor Shaft diameter at journals { H.P. **170"** I.P. **170"** L.P. **170"** } Pitch Circle { 1st pinion **11.3549"** 1st reduction wheel **49.9187"** 2nd pinion **15.426"** main wheel **120.837"** } Width of { 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 { 1st **290"** 2nd **290"** } Pinion Shafts, diameter at bearings { External **250"** Internal **360"** } diameter at bottom of pinion teeth { 1st **11.206"** 2nd **15.224"** }

Wheel Shafts, diameter at bearings { 1st **290"** 2nd **290"** } diameter at wheel shroud, { 1st **1203"** 2nd **2965"** } Generator Shaft, diameter at bearings **27.3.29**

Intermediate Shafts, diameter { as per rule **27.3.29** as fitted **16.25/32** } Thrust Shaft, diameter at collars { as per rule **27.3.29** as fitted **16.25/32** } Tube Shaft, diameter { as per rule **27.3.29** as fitted **16.25/32** }

Screw Shaft, diameter { as per rule **27.3.29** as fitted **16.25/32** } Is the { tube screw } shaft fitted with a continuous liner { **Bronze Liners**, thickness in way of bushes { as per rule **27.3.29** as fitted **16.25/32** }

Thickness between bushes { as per rule **27.3.29** as fitted **16.25/32** } Is the after end of the liner made watertight in the propeller boss { **Yes** }

Propeller, diameter **27.3.29** Pitch **27.3.29** No. of Blades **27.3.29** State whether Moveable **27.3.29** Total Developed Surface **27.3.29** square feet.

If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine { **Yes** }

Condenser { No. of Turbines fitted with astern wheels **27.3.29** } Feed Pumps { No. and size **27.3.29** How driven **27.3.29** }

Pumps connected to the Main Bilge Line { No. and size **27.3.29** How driven **27.3.29** }

Ballast Pumps, No. and size **27.3.29** Lubricating Oil Pumps, including Spare Pump, No. and size **27.3.29**

Are two independent means arranged for circulating water through the Oil Cooler { **Yes** }

Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room **27.3.29**

In Holds, &c. **27.3.29**

Main Water Circulating Pump Direct Bilge Suctions, No. and size **27.3.29** Independent Power Pump Direct Suctions to the Engine Room **27.3.29**

Bilges, No. and size **27.3.29** Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes **27.3.29**

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 **27.3.29**

Are all Sea Connections fitted direct on the skin of the ship **27.3.29** Are they fitted with Valves or Cocks **27.3.29**

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates **27.3.29** Are the Overboard Discharges above or below the deep water line **27.3.29**

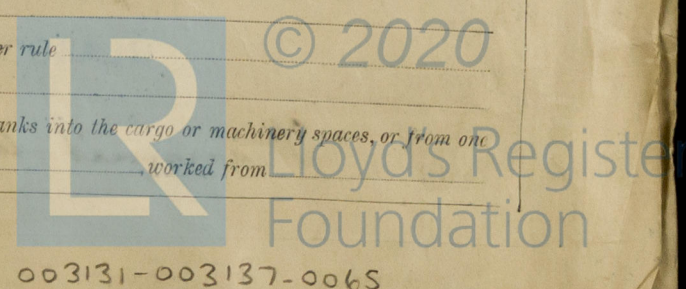
Are they each fitted with a Discharge Valve always accessible on the plating of the vessel **27.3.29** Are the Blow Off Cocks fitted with a spigot and brass covering plate **27.3.29**

What pipes pass through the bunkers **27.3.29** How are they protected **27.3.29**

What pipes pass through the deep tanks **27.3.29** Have they been tested as per rule **27.3.29**

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times **27.3.29**

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 **27.3.29** Is the Shaft Tunnel watertight **27.3.29** Is it fitted with a watertight door **27.3.29**



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?

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. State the articles supplied:—

FOR WILLIAM BEARDMORE & CO., LIMITED.

The foregoing is a correct description,

G. Langlands

Manufacturer.

Dates of Survey while building
During progress of work in shops --
During erection on board vessel ---
Total No. of visits

1929 Apr 11 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 li Rotors 29-7-29 li Blading 29-7-29 li Gearing 2-7-29 li

Wheel shaft 2-7-29 li Thrust shaft 2-7-29 li 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 Lloyd's Register of Shipping.

The amount of Entry Fee ... £

When applied for,

Special due 17-9-14

2-9-1929

1/3 due Belfast 8-14-8

When received,

Donkey Boiler Fee ... £

11-11-1929

Travelling Expenses (if any) £

Committee's Minute GLASGOW 3-SEP 1929

FRI. 6 JUN 1930

Assigned Transmit to London

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

Rpt. 5a

Date of writing

No. in Reg. Book.

Master

Engines made

Boilers made

Nominal H.P.

MULTIPLE

Manufactured

Total Heat

No. and Description

Tested by

Area of Fire

Area of each

In case of

Smallest diameter

Smallest diameter

Largest internal

Thickness

long, seams

Percentage

Percentage

Thickness of

Material

Length of pipe

Dimensions

End plates

How are stays

Tube plates

Mean pitch

Girders to

at centre

in each 3

Tensile strength

Pitch of stay

Working pressure

Thickness

Pitch of stay

Working pressure

Diameter { At

Working pressure

Diameter { At

Working pressure

Diameter { At

Working pressure

Diameter { At

Working pressure