

REPORT ON STEAM TURBINE MACHINERY, No. 87354

Received at London Office 15 JUL 1931

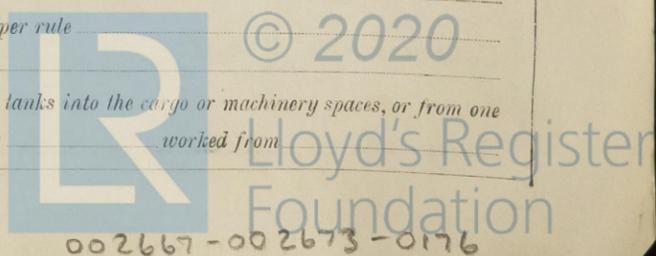
Date of writing Report 19 11/11/31 When handed in at Local Office 11/11/31 Port of NEWCASTLE-ON-TYNE
 No. in Survey held at Wallsend-on-Tyne. Date, First Survey 11 Nov 1930 Last Survey 8 July 1931
 Reg. Book. on the Low Pressure turbine for the S.S. San Bolivar (Number of Visits) Tons } Gross 9320
 } Net 5718
 Built at Wallsend. By whom built Swan Hunter W.R. Ltd. Yard No. 1465 When built 1931
 Engines made at Wallsend. By whom made Wallsend Shipways & Co. Ltd. Engine No. B.W.15+906 When made 1931
 Boilers made at Wallsend. By whom made Wallsend Shipways & Co. Ltd. Boiler No. 906 When made 1931
 Shaft Horse Power at Full Power 1130 Owners _____ Port belonging to _____
 Nom. Horse Power as per Rule 413 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes
 Trade for which Vessel is intended Carrying petroleum in bulk.

STEAM TURBINE ENGINES, &c.—Description of Engines Low Pressure turbine with double reduction gearing
 coupled to main shaft by hydraulic clutch.
 No. of Turbines Ahead one Direct coupled, single reduction geared } to one propelling shaft. No. of primary pinions to each set of reduction gearing ✓
 Astern _____ double reduction geared }
 direct coupled to Alternating Current Generator ✓ phase _____ periods per second } rated ✓ Kilowatts ✓ Volts at _____ 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 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							84 M/M	918 M/M	1			
2ND							101 "	952 "	1			
3RD							118 "	986 "	1			
4TH							135 "	1020 "	1			
5TH							152 "	1054 "	1			
6TH							176 "	1102 "	1			
7TH							200 "	1150 "	1			
8TH												
9TH												
10TH												
11TH												
12TH												

Shaft Horse Power at each turbine { H.P. ✓ I.P. ✓ L.P. 1130 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. ✓ I.P. ✓ L.P. 3520 } 1st reduction wheel 409.66 main shaft 42.
 Rotor Shaft diameter at journals { H.P. ✓ I.P. ✓ L.P. 170 M/M } Pitch Circle Diameter { 1st pinion 200.9322 1st reduction wheel 1726.9308 M/M } Width of Face { 1st reduction wheel 310 M/M main wheel 640 M/M }
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 115 M/M } 1st reduction wheel 1175 M/M AFT 400 M/M }
 Flexible Pinion Shafts, diameter { 1st 115 M/M } Pinion Shafts, diameter at bearings External 1st { 160 M/M } 2nd { 380 M/M } diameter at bottom of pinion teeth { 1st 186.356 2nd 392.719 M/M }
 Wheel Shafts, diameter at bearings { 1st 280 M/M } diameter at wheel shroud, { 1st 1600 M/M } Generator Shaft, diameter at bearings ✓ }
 Intermediate Shafts, diameter as per rule 14.625 " Thrust Shaft, diameter at collars as per rule 15.356 " Propelling Motor Shaft, diameter at bearings ✓ }
 as fitted 18 5/8 " Tube Shaft, diameter as per rule _____ as fitted _____ }
 Screw Shaft, diameter as per rule 16.29 " Is the screw shaft fitted with a continuous liner { yes } Bronze Liners, thickness in way of bushes as per rule .798 " as fitted 18 5/8 " }
 Thickness between bushes as per rule .598 " Is the after end of the liner made watertight in the propeller boss yes. 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 no Length of Bearing in Stern Bush next to and supporting propeller 6-5 "
 Propeller, diameter 20'-0" Pitch 17-6 mean No. of Blades 4 Condenser MAIN ENGINE EXHAUST State whether Moveable yes Total Developed Surface 120 square feet. If Single Screw, are arrangements made so that can be led direct to the condenser yes. Can the H.P. or I.P. Turbine exhaust direct to the condenser ✓
 Condenser ✓ No. of Turbines fitted with astern wheels ✓ Feed Pumps { No. and size _____ How driven SEE ATTACHED REPORT. }

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 2 @ 9x8x18
 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 _____
 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 _____



BOILERS, &c.—(Letter for record **S.**) Total Heating Surface of Boilers **8640 sq. ft.**
 Is Forced Draft fitted **yes** No. and Description of Boilers **3. S.E.** Working Pressure **220 lbs.**
 Is a Report on Main Boilers now forwarded? **yes**
 Is **a Donkey** Boiler fitted? **no** If so, is a report now forwarded?
an Auxiliary
 Plans. Are approved plans forwarded herewith for Shafting **no gears only** Main Boilers **yes** Auxiliary Boilers Donkey Boilers
 (If not state date of approval)

Superheaters **standard** General Pumping Arrangements **yes** Oil Fuel Burning Arrangements
 Spare Gear. State the articles supplied:— **2nd red gear wheel & pinion bearings bush, fwd heavy bush for high coupling shaft, ditto for aft bush, 1st red pinion bearings bush, fwd bearing turbine bush, aft ditto. Thrust pads for ahead main thrust, thrust pads for 2nd red pinion, thrust pads for turbine thrust. Studs & nuts for bearing keeps. etc.**

FOR THE WALLSEND SLIPWAY & ENGINEERING CO. LIMITED.

J. McPherson

GENERAL MANAGER Manufacturer

The foregoing is a correct description,

Dates of Survey while building { During progress of work in shops -- } **See Machinery Report.**
 { During erection on board vessel --- }
 Total No. of visits

Dates of Examination of principal parts—Casings **26-3-31** Rotors **25-3-31** Blading **8-4-31** Gearing **14-4-31**
 Wheel shaft **25-3-31** Thrust shaft **25-3-31** Intermediate shafts **29-4-31** Tube shaft Screw shaft **11-4-31**
 Propeller **14-4-31** Stern tube **20-4-31** Engine and boiler seatings **19-5-31** Engine holding down bolts **4-6-31**
 Completion of pumping arrangements **10-6-31** Boilers fixed **4-6-31** Engines tried under steam **8-4-31**

Main boiler safety valves adjusted **19-6-31** Thickness of adjusting washers **see report.**
 Rotor shaft, Material and tensile strength **O.H. Steel 39.8 tons** Identification Mark **4494 RW F (WB)**
 Flexible Pinion Shaft, Material and tensile strength **O.H. Steel 31.5 tons** Identification Mark **8904 J.L. (WB)**
 Pinion shaft, Material and tensile strength **1st red nickel steel 42.4 tons 2nd red nickel steel 43.4 tons** Identification Mark **8906 J.L. WB 8907 J.L. WB**
 1st Reduction Wheel Shaft, Material and tensile strength **O.H. Steel 31.4 tons** Identification Mark **8908 J.L. WB**
 Wheel shaft, Material **O.H. Steel** Identification Mark **8908 J.L. WB** Thrust shaft, Material **O.H. Steel** Identification Mark **8905 J.L. WB**
 Intermediate shafts, Material **O.H. Steel** Identification Marks **8910 E.I.S.** Tube shaft, Material Identification Marks
 Screw shaft, Material **O.H. Steel** Identification Marks **8911 & 8915 WB** Steam Pipes, Material **S.D. Steel** Test pressure **770 lbs**

Date of test **10-6-31** Is an installation fitted for burning oil fuel **yes**
 Is the flash point of the oil to be used over 150°F. **yes** Have the requirements of the Rules for the use of oil as fuel been complied with **yes**
 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
 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.)
This machinery has been built under special survey. Materials & workmanship good. See also machinery report herewith.

The amount of Entry Fee	£	:	:	When applied for,
Special	£	:	:	19
Donkey Boiler Fee	£	:	:	When received,
Travelling Expenses (if any)	£	:	:	19

William Bates
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **TUE. 21 JUL 1931**
 Assigned **See F.E. Rpt.**



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