

REPORT ON STEAM TURBINE MACHINERY.

No. 55954
31 JUL 1935

Rpt. 4a.

Date of writing Report 29. 7. 1935 When handed in at Local Office Port of Glasgow
 Date, First Survey 6. 4. 34 Last Survey 25. 7. 1935
 No. in Survey Book 137 (Number of Visits 137) Tons 8031 Gross, 11804 Net
 on the new steel S/S "MARWARRI"
 Built at Port Glasgow By whom built Wm Hamilton & Co Ld Yard No. 417 When built 1935
 Engines made at Glasgow By whom made Davis Rowan & Co Ld Engine No. 969 When made 1935
 Boilers made at Glasgow By whom made Davis Rowan & Co Ld Boiler No. 969 When made 1935
 Shaft Horse Power at Full Power 5500 Owners T & J Brocklebank Ld Port belonging to Liverpool
 Nom. Horse Power as per Rule 1150 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 Parsons turbines

No. of Turbines 3 Ahead 3 Astern 2 Direct coupled, single reduction geared } to one propelling shafts. No. of primary pinions to each set of reduction gearing 3
double reduction geared }
 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 _____ Direct coupled, single or double reduction geared to _____ propelling shafts.
 rated _____ Kilowatts _____ Volts at _____ revolutions per minute.

TURBINE BLADING.	H.P. ROTOR			I.P. ROTOR			L.P. ROTOR			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	1 1/16"	20 3/8"	13	1 7/8"	2-5 1/4"	7	3 5/8"	4-1 1/4"	2	HP Astern in 1 casing		
2ND "	1"	21"	13	2 9/8"	2-6 3/4"	7	4 3/4"	4-3 1/2"	2	Impulse wheel 45" mean dia		
3RD "	1 5/16"	21 5/8"	13	3 5/16"	2-8 1/8"	7	5 1/2"	4-5"	2	3 rows of blades		
4TH "	1 7/8"	22 3/4"	13	4 3/8"	2-10 1/4"	7	6 1/2"	4-7"	1	LP Astern:		
5TH "	2 9/16"	23 5/8"	13	4 3/8"	2-10 1/4"	7	8"	4-10"	1	Impulse wheel 45" mean dia		
6TH "							9"	5-0"	1	2 rows of blades &		
7TH "							9"	5-0"	1	Reaction blading thus:		
8TH "										2 1/8"	3-1/4"	2
9TH "										3"	3-6"	2
10TH "										4 1/4"	3-8 1/2"	2
11TH "										4 1/4"	3-8 1/2"	2
12TH "										4 1/4"	3-8 1/2"	2

Shaft Horse Power at each turbine { H.P. 1760 } 1st reduction wheel —
 { I.P. 1760 } I.P. 2008 main shaft 103
 { L.P. 1760 } L.P. 2008

Rotor Shaft diameter at journals { H.P. 6 1/2" } 1st pinion 7.498 1st reduction wheel —
 { I.P. 6 1/2" } Pitch Circle Diameter { 2nd pinion — } main wheel 145.029" Face { 1st reduction wheel — }
 { L.P. 6 1/2" }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 13 1/4" — 10 1/2" } 1st reduction wheel —
 { 2nd pinion — } main wheel 18 3/4"

Flexible Pinion Shafts, diameter { 1st — } External 1st { 6" } diameter at bottom of pinion teeth { 1st 7.358" }
 { 2nd — } Internal 1st { — } { 2nd — }

Wheel Shafts, diameter at bearings { 1st — } diameter at wheel shroud, { 1st — } Generator Shaft, diameter at bearings —
 { main 16 3/4" } { main 17 1/2" } Propelling Motor Shaft, diameter at bearings —
 as per rule 14.86" Thrust Shaft, diameter at collars as per rule 15.603" Tube Shaft, diameter as per rule —
 as fitted 15 3/4" as fitted 16 1/2" as fitted —

Screw Shaft, diameter as per rule 16.4 Is the { tube } shaft fitted with a continuous liner { yes } Bronze Liners, thickness in way of bushes as per rule .8"
 as fitted 18" as fitted — as 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
 as per rule .6 as fitted 13/16" 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
 plastic material insoluble in water and non-corrosive { yes } 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'-0"

Propeller, diameter 18'-6" Pitch 15'-7 1/2" No. of Blades 4 State whether Moveable { no } Total Developed Surface 108.4 square feet.
 If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine { yes } Can the H.P. or I.P. Turbine exhaust direct to the
 Condenser { yes } No. and size of turbine pump 1, Recip'g 10'-13 1/2" x 24" & 1, 8" x 10 1/2" x 22"
 No. of Turbines fitted with astern wheels 2 Feed Pumps { No. and size 10'-9-8 x 18, 10'-9-8 x 18. } How driven { steam }

Pumps connected to the Main Bilge Line { No. and size 12"-10 1/2" x 24" } Lubricating Oil Pumps, including Spare Pump, No. and size 10'-9-10 x 24" & 10'-7 1/2" x 10 1/2" Dia.
 How driven { steam } Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge
 Are two independent means arranged for circulating water through the Oil Cooler { yes }
 Pumps, No. and size: — In Engine and Boiler Room { engine room - 3 @ 3 1/2", strokehold - 2 @ 2 1/2" & 2 @ 3 1/2". }
 In Holds, &c. { No. 1 hold - 2 @ 3 1/2", No. 2 hold - 2 @ 3 1/2", No. 3 hold - 2 @ 3 1/2", Deep tank - 2 @ 3 1/2", No. 5 hold - 2 @ 3 1/2", Tunnel well - 1 @ 3 1/2". } All fitted at Enk.

Main Water Circulating Pump Direct Bilge Suctions, No. and size { one @ 5 1/2" } Independent Power Pump Direct Suctions to the Engine Room
 Bilges, No. and size { one @ 5 1/2" } Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes { yes }
 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 { yes }
 Are all Sea Connections fitted direct on the skin of the ship { yes } Are they fitted with Valves or Cocks { both }
 Are they fixed sufficiently high on the ship's side to be seen without lifting the strokehold plates { yes } Are the Overboard Discharges above or below the deep water line { both }
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel { yes } Are the Blow Off Cocks fitted with a spigot and brass covering plate { yes }
 What pipes pass through the bunkers { forward hold suction } How are they protected { under limber boards }
 What pipes pass through the deep tanks { D.B. air pipes } Have they been tested as per rule { yes }

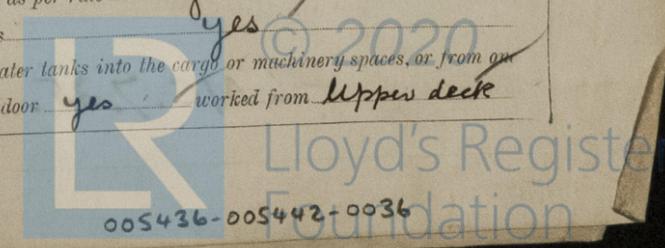
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times { yes }
 Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one
 compartment to another { yes } Is the Shaft Tunnel watertight { yes } Is it fitted with a watertight door { yes } worked from Upper deck

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BOILERS, &c. (Letter for record (r)) Total Heating Surface of Boilers 14060 sq ft Working Pressure 250

Is Forced Draft fitted yes No. and Description of Boilers four single ended

Is a Report on Main Boilers now forwarded? yes If so, is a report now forwarded? -

Is a Donkey Boiler fitted? no Plans. Are approved plans forwarded herewith for Shafting yes Main Boilers yes Auxiliary Boilers - Donkey Boilers -

Superheaters yes General Pumping Arrangements no Oil Fuel Burning Arrangements yes

Spare Gear. State the articles supplied: - Two bolts and nuts for each turbine casing joint, four bolts and nuts for each gear case joint. Ten bolts and nuts for propellers and turbine shaft couplings. Eight bolts for flexible couplings. Six turbine adjusting block pads - with thirty two liners. One HP pinion shaft, three complete pinion bushes. Two bottom half main wheel bushes. Two complete turbine bearing bushes. AIR PUMP - one rod complete with piston, bucket and all fittings. MAIN FEED PUMP - one rod complete with piston, bucket and all fittings. one steam valve chest. six suction and six delivery valves.

AUXILIARY FEED PUMP - one rod complete with piston, bucket and all fittings CIRCULATING PUMP one impeller and shaft. one crankshaft one rod complete with piston, bucket and fittings

For David Rowan & Co. Ltd. Arch. N. Grierson Manufacturer.

The foregoing is a correct description,

Dates of Survey while building 1934 Apr: 6-12-19-26 May: 2-10-29 June: 2-12-26-29 July: 6-11-30 Aug: 1-6-7-8-9-13-15-16-20-24-27-29-31 Nov: 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31

Dates of Examination of principal parts - Casings 11-12-34 Rotors 21-11-34 Blading 13-2-35 Gearing 19-4-35-27-4-35

Wheel shaft 26-11-34 Thrust shaft 27-11-34 Intermediate shafts 16-10-34 Tube shaft - Screw shaft 25-4-35

Propeller 25-4-35 Stern tube 19-4-35 Engine and boiler seatings ENR Engine holding down bolts 10-6-35

Completion of pumping arrangements 28-6-35 Boilers fixed 28-6-35 Engines tried under steam 25-7-35

Main boiler safety valves adjusted 1-7-35 Thickness of adjusting washers: FP 3/8" 23/64" FS 1/2" 3/8" AP 1/2" 3/8" AS P 3/8" 23/64" LLOYD'S L.C.D. 15376-15377-220

Rotor shaft. Material and tensile strength S.M. Steel. No. 15376 35.5 tons No. 15377 35.2 tons No. 2201 33.0 tons Identification Mark

Flexible Pinion Shaft, Material and tensile strength - No. 15379 45.9 tons No. 15380 45.9 tons No. 15381 45.5 tons No. 15382 40.3 tons Identification Mark

Pinion shaft, Material and tensile strength S.M.N. Steel Identification Mark

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

Wheel shaft, Material S.M. Steel Identification Mark

Intermediate shafts, Material S.M. Steel Identification Marks

Screw shaft, Material S.M. Steel Identification Marks

Thrust shaft, Material S.M. Steel Identification Mark

Tube shaft, Material - Identification Marks

Steam Pipes, Material S.D. Steel Test pressure 750 lbs per sq in

Date of test 15-2-35 Is an installation fitted for burning oil fuel no

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 no If so, state name of vessel -

General Remarks (State quality of workmanship, opinions as to class, &c.) The materials and workmanship are good. The machinery has been constructed under special survey and is eligible in my opinion for classification and the Record + LMC 7,35.

29/7/35 All the machinery has been satisfactorily fitted in the vessel. tried under steam and found good.

Table with columns: The amount of Entry Fee, Special, Donkey Boiler Fee, Travelling Expenses (if any). Values: £ 6, £ 128: 15, £, £.

S. Davis, J. J. Thomas Engineer Surveyor to Lloyd's Register of Shipping.

FRI. 8 JAN 1935

Committee's Minute GLASGOW 30 JUL 1935

Assigned + L.M.C. 7.35.

Glasgow

