

# REPORT ON STEAM TURBINE MACHINERY. No. 49593

Received at London Office 11 SEP 1929

10 When handed in at Local Office 9.9.29 Port of Glasgow

11 in Survey held at Glasgow Date, First Survey 8.1.29 Last Survey 30.8.29

12 on the Steel Liner Steam "Irwin" (Number of Visits 40)

13 Tons Gross 970.11 Net 377.39

14 Built at Glasgow By whom built D. W. Henderson Yard No. 859 M When built 1929

15 Engines made at Glasgow By whom made James Watson & Co. Ltd. Engine No. 1671 When made 1929

16 Boilers made at Glasgow By whom made James Watson & Co. Ltd. Boiler No. 1571 When made 1929

17 Shaft Horse Power at Full Power 1400 Owners South Indian Railway Co. Ltd. Port belonging to Glasgow

18 Nom. Horse Power as per Rule 289.353 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes

19 Made for which Vessel is intended

## STEAM TURBINE ENGINES, &c.—Description of Engines Brown Boveri—Single reduction gear.

20 of Turbines Ahead 2 Direct coupled, single reduction geared } to 2 propelling shafts. No. of primary pinions to each set of reduction gearing 1

21 Astern 2 double reduction geared

22 Direct coupled to Alternating Current Generator — phase — periods per second — rated — Kilowatts — Volts at — revolutions per minute;

23 Driving power for driving — Propelling Motors, Type —

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

LINE	H. P.			I. P.			L. P.			ASTERN.		
ING.	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.
EXPANSION	9 16	1 3 16 25 7 16, 26 1 16	2							1 3 4 5 1 4	31 3 8 33 7 16, 35 1 16	3
"	5 8	1 3 8 26 5 8, 24 3 8	2									
"	1	1 1 16 28 28 4 8	2									
"	1 3 4	28 3 4	1	None			None					
"	2 3 16	24 7 16	1									
"	2 5 8	30 5 8	1									
"	3 1 4	31	1									
"	4 1 4	32 1 2	1									
"	5 1 8	34 3 8	1									
"												
"												
"												
"												

Horse Power at each turbine { H.P. 700 I.P. — L.P. — } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 3500 I.P. — L.P. — } 1st reduction wheel — main shaft 300.

Shaft diameter at journals { H.P. 6 3/4 I.P. — L.P. — } Pitch Circle Diameter { 1st pinion 4.775 1st reduction wheel — 2nd pinion — main wheel 55.766 } Width of Face { 1st reduction wheel — main wheel 17" }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 6 3/4 1st reduction wheel — 2nd pinion — main wheel 8 3/8 }

Pinion diameter { 1st — 2nd — } Pinion Shafts, diameter at bearings External 1st 4" 2nd — diameter at bottom of pinion teeth { 1st 4.385 2nd — }

Shafts, diameter at bearings { 1st — 2nd — } diameter at wheel shroud, { 1st — 2nd — } Generator Shaft, diameter at bearings — Propelling Motor Shaft, diameter at bearings —

Intermediate Shafts, diameter as per rule 5.36 as fitted 5.38 Thrust Shaft, diameter at collars as per rule 5.628 as fitted 6 Tube Shaft, diameter as per rule 5.628 as fitted 6 7/8

Shaft, diameter as per rule 6.11 as fitted 6 1/8 Is the { tube screw } shaft fitted with a continuous liner? None. Bronze Liners, thickness in way of bushes as per rule — as fitted —

Distance 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

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

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

appliance fitted at the after end of the tube shaft? Yes. Vickers Length of Bearing in Stern Bush neck and supporting propeller 18 1/2"

Propeller, diameter 6-3 Pitch 5-9 No. of Blades 3 State whether Moveable Solid Total Developed Surface 13 square feet.

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

sea? Yes. No. of Turbines fitted with astern wheels 2 Feed Pumps { No. and size 2 @ 6 x 8 1/2 x 13 How driven Steam }

Shafts connected to the Main Bilge Line { No. and size 2 @ 26 Ton per hour How driven Steam }

Water Pumps, No. and size 1 @ 6 x 6 1/2 x 15, 1 @ 6 x 8 1/2 x 13 Lubricating Oil Pumps, including Spare Pump, No. and size 2 @ 5 x 4 1/2 x 12

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 Eng. Room 2 @ 2 1/2, Boiler Room 2 @ 2 1/2, Bilge 1 @ 2 1/2, Tunnel well 1 @ 2 1/2.

Discharges, &c. Forward 2 @ 2 1/2, aft 4 @ 2 1/2

Water Circulating Pump Direct Bilge Suctions, No. and size 2 @ 3 1/4 Independent Power Pump Direct Suctions to the Engine Room

No. and size 2 @ 3 1/4 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes? Yes.

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

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 stokehold plates? Yes. Are the Overboard Discharges above or below the deep water line? Below.

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.

How are they protected? Steel covering. Have they been tested as per rule? Yes.

Are the Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times? Yes.

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? See hull Report. Is it fitted with a watertight door? Yes. worked from Main Deck.



BOILERS, &c. (Letter for record ☒) Total Heating Surface of Boilers 5000 ft<sup>2</sup>  
Is Forced Draft fitted ☒ No. and Description of Boilers 2 Janns Water Tube Working Pressure 225 lbs  
Is a Report on Main Boilers now forwarded? ☒ If so, is a report now forwarded?  
Is a Donkey Boiler fitted? ☒ Main Boilers ☒ Auxiliary Boilers ☐ Donkey Boilers ☐  
Plans. Are approved plans forwarded herewith for Shafting ☒ Oil Fuel Burning Arrangements ☒  
(If not state date of approval)  
General Pumping Arrangements ☒  
Superheaters ☐  
Spare Gear. State the articles supplied:—

In accordance with Rules and additional



Manufacturer.

The foregoing is a correct description,

Dates of Survey while building { During progress of work in shops -- 1929 Jan 8-38 Feb 5-16-20-28 Mar 7-21-26 Apr 2-11-18-22-29 May 8-13-21-24-29 June 4-11-14-18-19-24  
During erection on board vessel --- 25-28 July 1-4-5-10-26-30 Aug 6-12-14-19-21-26-30  
Total No. of visits 40  
Dates of Examination of principal parts—Casings 18.4.29 Rotors 2.4.29 Blading 13.5.29 Gearing 15.2.29 (FR)  
Wheel shaft and Thrust shaft 15.2.29 Intermediate shafts 16.4.29 (FR) Tube shaft and Screw shaft 16.4.29 (FR)  
Propeller 21.5.29 Stern tube 18.4.29 Engine and boiler seatings 21.5.29 Engine holding down bolts 24.6.29  
Completion of pumping arrangements 26.8.29 Boilers fired 24.6.29 Engines tried under steam 26.8.29  
Main boiler safety valves adjusted 14.8.29 Thickness of adjusting washers Pat Biln F 3/8 A 3/8 St Biln F 7/16 A 1/2  
Rotor shaft, Material and tensile strength Siemens Steel Identification Mark 270/1-20-12-28-JR  
Flexible Pinion Shaft, Material and tensile strength Identification Mark —  
Pinion shaft, Material and tensile strength Nickel Chrome Steel 59.7 x 60.0 Identification Mark 147/8-25-29-JR  
1st Reduction Wheel Shaft, Material and tensile strength Identification Mark — Thrust shaft, Material Siemens Steel Identification Mark 6153-JR  
Wheel shaft, Material and Identification Mark — Tube shaft, Material Identification Marks —  
Intermediate shafts, Material SM. Light steel Identification Marks 277.277ABre J.H. 16.4.29 Test pressure 675 lbs  
Screw shaft, Material do Identification Marks 274.274JH 16.4.29 Steam Pipes, Material Steel  
Date of test 10.7.29 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 ☒  
If so, state name of vessel

Is this machinery a duplicate of a previous case ☒ No. If so, state name of vessel

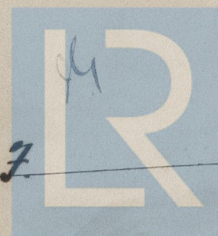
General Remarks (State quality of workmanship, opinions as to class, &c.)  
The Machinery of this vessel has been built under special survey and in accordance with the Rules. The materials & workmanship are good. It has been apparently secured on board and on completion has been tried under full working conditions with satisfactory results. The Machinery of this vessel is eligible, in my opinion, to be classed in the Register Book with notation of +LMC 8.29. Fitted for oil fuel 8.29. F.P. above 150°F.

The amount of Entry Fee ... £ 45-0-0  
Special ... £ 12-19-0  
Donkey Boiler Fee ... £  
Travelling Expenses (if any) ... £  
When applied for, 10 SEP 1929  
When received, 13.9.29

Committee's Minute GLASGOW 10 SEP 1929

Assigned + L.M.C 8.29 7D.

Fitted for oil fuel 8.29. F.P. above 150°F.



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