

# REPORT ON STEAM RECIPROCATING ENGINE MACHINERY.

Received at London Office

OCT 27 1937

Date of writing Report 19 25 When handed in at Local Office 25. 10. 37 Port of Glasgow  
 No. in Survey held at Glasgow Date, First Survey 28. 10. 36 Last Survey 21. 10. 1937  
 Reg. Book on the new steel S/S "IRON KNIGHT" (Number of Visits 87) Tons { Gross 4812 Net 2737  
 Built at Port Glasgow By whom built Lithgows Ltd Yard No. 902 When built 1937  
 Engines made at Glasgow By whom made Wain Rowan & Co. Ltd Engine No. 1007 When made 1937  
 Boilers made at Stenhouse By whom made Babcock & Wilcox Boiler No. 6/1320 When made 1937  
 Registered Horse Power Turb SHP 530 Owners Broken Hill Proprietary Co. Ltd Port belonging to Melbourne  
 Nom. Horse Power as per Rule 504 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes  
 TOTAL - 553  
 Trade for which Vessel is intended carrying iron ore on the Australian coast

ENGINES, &c. - Description of Engines Quadruple expansion Revs. per minute 80  
 Dia. of Cylinders 24-34 1/2-50-71 Length of Stroke 48 No. of Cylinders 4 No. of Cranks 4  
 Crank shaft, dia. of journals as per Rule 14.47 Crank pin dia. 14 3/4 Crank webs Mid. length breadth 23 1/2 Thickness parallel to axis 10  
 as fitted 14 3/4 Mid. length thickness 10 shrunk Thickness around eye-hole 6 7/8  
 Intermediate Shafts, diameter as per Rule 13.782 Thrust shaft, diameter at collars as per Rule 14.47  
 as fitted 14 as fitted 14 3/4  
 Tube Shafts, diameter as per Rule 15.293 Is the { tube } shaft fitted with a continuous liner { yes  
 as fitted 15 7/8 { screw }  
 Bronze Liners, thickness in way of bushes as per Rule .77 Thickness between bushes as per Rule .55 Is the after end of the liner made watertight in the  
 as fitted 13/16 as fitted 3/4  
 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 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 If so, state type - Length of Bearing in Stern Bush next to and supporting propeller 5.4  
 Propeller, dia. 18-3 Pitch 18-3 No. of Blades 4 Material Brass Blades - bronze Is the propeller whether moveable yes Total Developed Surface 95.5 sq. feet  
 Feed Pumps worked from the Main Engines, No. none Diameter - Stroke - Can one be overhauled while the other is at work -  
 Bilge Pumps worked from the Main Engines, No. none Diameter - Stroke - Can one be overhauled while the other is at work -  
 Feed Pumps { No. and size 2 @ 9 1/2 - 7 x 2 1/2 Pumps connected to the { No. and size 2 @ 8" & 9" x 18" (Bilge pumps) & ballast pumps  
 How driven steam Main Bilge Line { How driven steam steam  
 Ballast Pumps, No. and size 2 @ 12 1/2 x 14 x 24 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; - In Engine and Boiler Room 3 @ 2 1/2" & 1 @ 3" in eng. room. 4 @ 2 1/2" in stokehold. 1 @ 2" in copperdam aft. 1 @ 2" in copperdam fore.  
 In Pump Room - In Holds, &c. Nº 1 hold - 2 @ 3". Nº 2 hold - 2 @ 3". Nº 3 hold - 2 @ 4".  
 Hold Suctions fitted at eng.

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1 @ 12" Independent Power Pump Direct Suctions to the Engine Room Bilges,  
 No. and size 1 @ 4 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 stokehold 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 none How are they protected -  
 What pipes pass through the deep tanks no 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 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 none Is it fitted with a watertight door - worked from -

MAIN BOILERS, &c. - (Letter for record (S) ) Total Heating Surface of Boilers 6612 sq. ft.  
 Is Forced Draft fitted yes No. and Description of Boilers 3 Water tube Working Pressure 250  
 IS A REPORT ON MAIN BOILERS NOW FORWARDED? yes Ego Rpt. N.º -  
 IS A DONKEY BOILER FITTED? no If so, is a report now forwarded? -  
 Is the donkey boiler intended to be used for domestic purposes only -

PLANS. Are approved plans forwarded herewith for Shafting no Main Boilers See Rpt. Auxiliary Boilers - Donkey Boilers -  
 (If not state date of approval)  
 Superheaters See Rpt. General Pumping Arrangements no Oil fuel Burning Piping Arrangements -

### SPARE GEAR.

Has the spare gear required by the Rules been supplied yes  
 State the principal additional spare gear supplied one propeller shaft, 2 propeller blades, one bottom end bearing, one top end bearing,  
 one impeller for circulating pumps.

The foregoing is a correct description,  
 For David Rowan & Co. Ltd  
 Arch. W. Grierson

Manufacturer.



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 Foundation  
 180-0245

NOTE - The words which do not apply should be marked.

Im. 332. T.

1936 Oct: 28 Nov: 5-18 Dec: 7-8 15-18 21-23 28-30 (1937) Jan: 15-25 Feb: 5-8 15-17-26  
 During progress of work in shops -- Mar: 2-5-16-24 Apr: 1-9-15-16-19-20-21-26-27 May: 10-19-20-21-25-26-27-31 June  
 Dates of Survey while building During erection on board vessel -- 1-3-7-11-15-16-28-29-30 July: 2-5-6-8-9-12-14-29 Aug: 9-10-13-18-19-24-25-26-30  
 Sep: 2-3-6-7-9-10-13-17-22-24-29/30  
 Oct: 1-4-5-6-7-8-11-13-19-21  
 Total No. of visits 87

Dates of Examination of principal parts—Cylinders 1-6-37 Slides 2-4-8-37 Covers 26-5-37  
 Pistons 2-7-37 Piston Rods 13-8-37 Connecting rods 16-4-37  
 Crank shaft 16-6-37 Thrust shaft 9-8-37 Intermediate shafts none  
 Tube shaft none Screw shaft 13-8-37 Propeller 19-8-37  
 Stern tube 29-6-37 Engine and boiler seatings 9/11 Engines holding down bolts 17-9-37  
 Completion of fitting sea connections 9/11  
 Completion of pumping arrangements 21-10-37 Boilers fixed 29-9-37 Engines tried under steam 21-10-37  
 Main boiler safety valves adjusted 13-10-37 Thickness of adjusting washers P- $\frac{1}{2}$ "  $\frac{3}{8}$ " S- $\frac{3}{4}$ "  $\frac{1}{2}$ " A- $\frac{5}{16}$ "  $\frac{3}{8}$ "  
 Crank shaft material 9. steel Identification Mark \* LLOYD'S NO 6723 Thrust shaft material 9. steel Identification Mark \* LLOYD'S NO 6723  
 Intermediate shafts, material none Identification Marks L.S.D. 16-6-37 Tube shaft, material Identification Mark L.S.D. 9-8-37  
 Screw shaft, material 9. steel Identification Mark \* LLOYD'S NO 6723 Steam Pipes, material steel Test pressure 750 Date of Test 22-9-37  
 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 the use of oil as fuel been complied with -  
 Is the vessel (not being an oil tanker) fitted for carrying oil as cargo no If so, have the requirements of the Rules been complied with -  
 If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with -  
 Is this machinery duplicate of a previous case yes If so, state name of vessel "Iron Baron" Gls Rpt No 57224  
 Boilers and pumping arrangement not duplicate.

General Remarks (State quality of workmanship, opinions as to class, &c.)

\* In addition to these marks, each shaft is stamped with its original forge number as per forging reports hereunder  
 The Rowan-Ejotaverken Turbo compressor has been fitted with these engines and is arranged to compress the exhaust steam from the high pressure cylinder and deliver it to the first intermediate cylinder valve casing.  
 The brake horsepower of the exhaust turbine is given as 530  
 A Report on this turbo compressor (T.C.79) has been prepared on Form 10. Copy attached.  
 The machinery has been constructed under special survey, satisfactorily fitted in the vessel, tried under steam and found good. It is eligible in my opinion for Classification and the Record + L.M.C. NO, 37. Also notation "Exhaust turbine driving steam compressor".

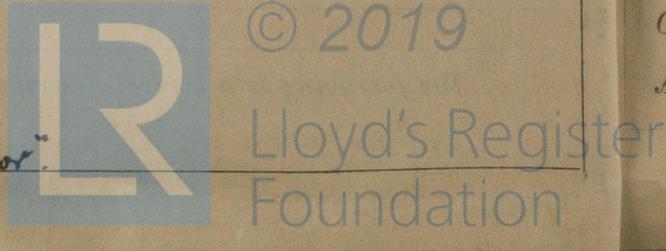
23/10/37

The amount of Entry Fee ... £ 6 : : When applied for,  
 Special ... £ 58 : 2 : : 19  
 Donkey Boiler Fee ... £ : : :  
 Travelling Expenses (if any) £ : : : 5.11.19 37/26/11

Schano  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 26 OCT 1937

Assigned + L.M.C. 10.37 F.D.  
 Exhaust Turbine driving steam compressor.



L.M.C. 21/10/37

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