

REPORT ON MACHINERY

No. 41119

WED. 25 MAY. 1921

Received at London Office

Date of writing Report 14.5.21 When handed in at Local Office 14.5.21 Port of Glasgow
 No. in Survey held at 1 Date, First Survey 3rd April 1919 Last Survey 12th May 1921
 Reg. Book. T.S.S. MANELA (Number of Visits 100)

Master By whom built Barclay Curle & Co. (No 580) When built 1921
 Engines made at Glasgow By whom made do. (No 580) when made 1921
 Boilers made at do. By whom made do. (No 580) when made 1921
 Registered Horse Power Owners British India Steam Nav Co Port belonging to Glasgow
 Shaft Horse Power at Full Power 4050 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes
RULE H.P. 926

TURBINE ENGINES, &c.—Description of Engines Brown & Co. H.P. 1 P. & L.P. (H.P. + 1 P. in tandem) No. of Turbines (6) 4
with double reduction gearing
 Diameter of Rotor Shaft Journals, H.P. 3" 1 P. 3 1/2" L.P. 7" Diameter of Pinion Shaft 1st 4 3/4" 2nd 12 1/2"
 Diameter of Journals 1st 4 3/4" 2nd 8 3/4" Distance between Centres of Bearings 1st 24 1/2" 4-9" Diameter of Pitch Circle H.P. 6.642" 2nd 4.192"
 Diameter of Wheel Shaft 13 1/2" Distance between Centres of Bearings 5-1" Diameter of Pitch Circle of Wheel 6.1728"
 Width of Face 24" Diameter of Thrust Shaft under Collars 12 5/8" Diameter of Tunnel Shaft as per rule 12.03"
 No. of Screw Shafts 2 Diameter of same as per rule 13.43" Diameter of Propellers 16-3" Pitch of Propeller 18-3"
fitted with continuous liners as fitted 13 3/4"
 No. of Blades 3 State whether Moveable yes Total Surface 136 sq ft Diameter of Rotor Drum, H.P. — L.P. — Astern —
 Thickness at Bottom of Groove, H.P. — L.P. — Astern — Revs. per Minute at Full Power, Turbine 3240 (H.P.) Propeller 2153.6 L.P. 81.5

PARTICULARS OF BLADING.

	H.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.
1ST EXPANSION	11" - 1 5/16"	19 1/2" - 20 1/16"	2	1st 2 1/2"	3-4 3/4"	1	9th 5 1/2"	3-11 3/4"	1
2ND	2" - 1 1/8"	20" - 20 1/16"	2	2nd 2 1/2"	3-5 1/4"	1	10th 6 5/8"	4-0 3/8"	1
3RD	2 1/2" - 2 3/4"	20 1/2" - 21 1/16"	2	3rd 2 7/8"	3-5 1/2"	1	11th 7 3/4"	4-3 1/16"	1
4TH	2 1/8"	23 3/8" - 24 7/16"	2	4th 2 7/8"	3-6 5/8"	1	12th 8"	4-3 3/4"	1
5TH	2 5/8"	24 7/16"	1	5th 3 3/8"	3-7 1/8"	1	13th 8 3/8"	4-4 5/8"	1
6TH	2 3/8"	24 7/16"	1	6th 3 3/4"	3-8 7/16"	1	ASTERN		
7TH	2 5/8"	24 7/16"	1	7th 4 7/16"	3-9 7/16"	1	1st 11 1/2" - 11 1/16"	3-9 1/2" - 3-10 1/16"	3
8TH	2 3/8"	24 7/16"	1	8th 4 7/16"	3-10 7/16"	1	2nd 11 1/2" - 11 1/8"	3-10 3/8" - 3-11 3/4" - 4-0 3/8"	3

No. and size of Feed pumps (2 main) 12x9x24 (1 auxiliary) 7 1/2x5 1/2x15" ✓
 No. and size of Bilge pumps (1) 7x8x12 (2 Lubricating working) 5 1/2x7 1/2x15" (1 Lubricating spare) 5 1/2x7 1/2x15" (1 Ballast) 9x11x10" ✓
 No. and size of Bilge suction in Engine Room (2) 3 1/2" 3 1/2" hold (2) 3 1/2" ✓
 In Holds, &c. no 1-2-3-4-5+6 (2 each) 3 1/2" ✓

Lunnel well (1) 2 1/2" ✓
 No. of Bilge Injections 2 sizes 9 1/2" Connected to condenser, or to circulating pump yes Is a separate Donkey Suction fitted in Engine Room & size yes 5" ✓
 Are all the bilge suction pipes fitted with roses yes Are the roses in Engine room always accessible yes ✓
 Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks no ✓
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates yes Are the Discharge Pipes 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 ✓
 What pipes are carried through the bunkers 7 d. Suctions How are they protected Iron casings ✓
 Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times yes ✓
 Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges yes ✓
 Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from upper deck ✓

BOILERS, &c.—(Letter for record S ✓ Manufacturers of Steel Beardmore & Co. Ltd. & Colville & Sons, Ltd.
 Total Heating Surface of Boilers 12628 sq ft Is Forced Draft fitted yes No. and Description of Boilers 4 Single ended
 Working Pressure 215 lb Tested by hydraulic pressure to 377 lb Date of test 29.6.20 4.8.20 No. of Certificate 533.15408
 Can each boiler be worked separately yes Area of fire grate in each boiler 75.16 sq ft No. and Description of Safety Valves to each boiler 2 Spring loaded Area of each valve 11.04 sq in Pressure to which they are adjusted 229 lb Are they fitted with easing gear yes ✓
 Smallest distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 16-6" Length 12-0" Material of shell plates Steel ✓
 Thickness 1 3/4" Range of tensile strength 31/35 tons Are the shell plates welded or flanged yes Descrip. of riveting: cir. seams do Lap ✓
 long. seams TR DBS Diameter of rivet holes in long. seams 1 7/8" Pitch of rivets 10 3/32" Lap of plates or width of butt straps 22 3/4" ✓

Per centages of strength of longitudinal joint plates 85.16 Working pressure of shell by rules 207 Size of manhole in shell 16x12" ✓
 Size of compensating ring 3.12x33x1 1/4" No. and Description of Furnaces in each Boiler 4 6000 gal. Material Steel Outside diameter 39 1/4" ✓
 Length of plain part top - bottom - Thickness of plates crown 21" bottom 32" Description of longitudinal joint weld No. of strengthening rings - ✓

Working pressure of furnace by the rules 236 Combustion chamber plates: Material Steel Thickness: Sides 11" Back 3 1/2" Top 16" Bottom 27" ✓
 Pitch of stays to ditto: Sides 8 1/4x7 1/4" Back 6 9x7 1/4" Top 9x8" If stays are fitted with nuts or riveted heads yes Working pressure by rules 248 End plates in steam space yes ✓
 Material of stays Steel Diameter at smallest part 1.780" Area supported by each stay 62.9 Working pressure by rules 215 Material of stays Steel ✓
 Material Steel Thickness 1 1/4" Pitch of stays 20x16" How are stays secured 6 nuts Working pressure by rules 215 Material of Front plates at bottom Steel ✓
 Diameter at smallest part 6.6 Area supported by each stay 320 Working pressure by rules 215 Material of Front plates at bottom Steel ✓
 Thickness 3 1/2" Material of Lower back plate Steel Thickness 3 1/2" Greatest pitch of stays 14 1/4" Working pressure of plate by rules 216 ✓
 Diameter of tubes 2 1/2" Pitch of tubes 3 1/2x3 1/4" Material of tube plates Steel Thickness: Front 3 1/2" Back 1 3/8" Mean pitch of stays 7 1/2" ✓
 Pitch across wide water spaces 13 1/2" Working pressures by rules 224 Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 10x32(2) Length as per rule 2-10" Distance apart 9" Number and pitch of stays in each (3) 8" ✓
 Working pressure by rules 215 Steam dome: description of joint to shell none % of strength of joint - Diameter - ✓
 Thickness of shell plates - Material - Description of longitudinal joint - Diameter of rivet holes - Pitch of rivets - ✓
 Working pressure of shell by rules - Crown plates: Thickness - How stayed - ✓

SUPERHEATER. Type *none*

Date of Approval of Plan

Tested by Hydraulic Pressure to

Date of Test

Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler

Diameter of Safety Valve

Pressure to which each is adjusted

Is Easing Gear fitted

IS A DONKEY BOILER FITTED?

no

If so, is a report now forwarded?

SPARE GEAR.

State the articles supplied:— 2 Bolts & nuts for each rotor bearing 2 bolts & nuts for main gear wheel bearing 2 bolts & nuts for each Pin in bearing 1 set coupling bolt of each size to the total number of bolts & nuts for each gear case joint and for each turbine case joint, 2 thermometers for oil circulating system 1 set bearing bushes for gear wheel shaft, 1 set bearing bushes for rotors and 1 set bearing bushes for Pinion shafts. 1 set of segments for each pin gland & 1/2 doz of springs, 2 thrust horse shoes, 2 sets thrust pads for each size of turbine 1 set liners for adjusting blocks 1 set feed Pump Valves 1 set helge Pump Valves, 1 set lubricating Pump valves, bucket & rod for lubricating oil Pump, escape Valve of each size a quantity of assorted bolts & nuts. The foregoing is a correct description, & marks & scales of mild steel, and other articles.

FOR BARCLAY, CURLE & CO., LTD.

Manufacturer.

John McEwan

1919. Apr 3. May 20 Jun 14. 18. 23 July 16. 10. Aug 20. 25 Sep 8. 17 Oct 30 Nov 4. 11. 13. 20. Dec 4. 5. 8. 14. 15. 19. 26. 31 (1920) Jan 12. 13. 20. 21. Feb 5. 13. 18. 24. Mar 4. 9. 11. 23. 26. 24. 31 Apr 6. 8. 20. 23. 26 May 3. 10. 12. 18. 24. 26 28. 31 June 1. 2. 10. 14. 18. 21. 23. 24. 28. 29. 30 July 6. 8. 14. 15. Aug 2. 5. 10. 24. 25 Sep 6. 16. 19 Oct 5. 6. 12. 16. 18. 19 Nov 1. 3. 8. 15. 17. 19. 25. 30 Dec 3. 7. 15. 24. 27 (1921) Jan 17. Apr 30 May 3. 5. 12. Total No. of visits 100.

Is the approved plan of main boiler forwarded herewith

Yes

" " " donkey " " "

Dates of Examination of principal parts—Casings 4.3.20 Rotors 12.5.20 Blading 12.5.20 Gearing 4.3.20

Rotor shaft 4.3.20 Thrust shaft 24.6.20 Tunnel shafts 2.6.20 Screw shaft 24.8.20 Propeller 6.10.20

Stern tube 6.9.20 Steam pipes tested 3.12.20 Engine and boiler seatings 6.10.20 Engines holding down bolts 24.12.20

Completion of pumping arrangements 24.12.20 Boilers fired 7.12.20 Engines tried under steam 24.12.20 12.5.21

Main boiler safety valves adjusted 24.12.20 Thickness of adjusting washers *as per Pt F 8 A 11. C. 1/2 F 32 A 32. St. F 32 A 32. T. F 32 A 32. D. F 32 A 32. A 1/6*Material and tensile strength of Rotor shaft *nickel steel 34.8 & 37.6 tons* Identification Mark on Do. 3977 A.F. 4.3.20Material and tensile strength of Pinion shaft *60 40.86 44 tons* Identification Mark on Do. 3977 A.F. 4.3.20 J.E.Material of Wheel shaft *Steel* Identification Mark on Do. 3977 A.F. Material of Thrust shafts *Steel* Identification Mark on Do. 4495.4 496Material of Tunnel shafts *60* Identification Marks on Do. 3977 A.F. TM 2.6.20 Material of Screw shafts *Steel* Identification Marks on Do. 3977 A.F. 24.8.20 J.E.Material of Steam Pipes *L to Iron* Test pressure 64.5 lbIs 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 Section 49 of the Rules been complied with *Yes*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, etc.)

The Engines & Rotor of this Vessel have been built under Special Survey in accordance with the Rules and approved Plans, the materials and workmanship are good. The machinery has been tried under working conditions and found to work satisfactorily and is, in our opinion, eligible to be classed with records of + LMC 5.21 and fitted for oil fuel 5.21 F.P. above 150° F.

It is submitted that this vessel is eligible for THE RECORD.

+ LMC. 5.21. FD. CL 926 NHP. A. Steam Turbines geared to 2 screw shafts fitted for oil fuel 5.21 F.P. above 150°F.

The amount of Entry Fee ... £ 6 : 0 :

Special ... £ 121 : 6 :

Donkey Boiler Fee ... £ :

Travelling Expenses (if any) £ :

When applied for,

13/5/21

When received,

27.10.19

as at 30/5/21
as at 30/5/21
as at 30/5/21

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

GLASGOW 24 MAY 1921

Assigned + LMC 5.21

MACHINERY CERT.
WRITTEN 28.10.21
(dated 25/1/21)

Fitted for oil fuel 5.21 F.P. above 150°F.



© 2021

Lloyd's Register Foundation