

REPORT ON MACHINERY

No. 17847

Received at London Office 16 JUL 1921

Date of writing Report 25 June 1921 When handed in at Local Office 29 June 1921 Port of Greenock

No. in Survey held at Greenock Date, First Survey 24 July 1919 Last Survey 28 June 1921
Reg. Book. on the Steel Screw Steamer Gracia (Number of Visits 167)

Master James Macdonald Built at Greenock By whom built Scott & Co Ltd When built 1921
Engines made at Greenock By whom made Scott & Co Ltd when made 1921
Boilers made at Greenock By whom made Scott & Co Ltd when made 1921
Registered Horse Power 736 Owners Donaldson Line Ltd Port belonging to Glasgow
Shaft Horse Power at Full Power 3150 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

TURBINE ENGINES, &c.—Description of Engines The Main Cent in Steamers geared to No. of Turbines Two
Diameter of Rotor Shaft Journals, H.P. 4 1/2" L.P. 5 1/2" Diameter of Pinion Shaft 4 P 5" L P 5 1/2"
Diameter of Journals 4 P 5" L P 5 1/2" Distance between Centres of Bearings 2' 6 1/2" Diameter of Pitch Circle 4 P 6' 6 1/2" L P 4' 2" Rad 17' 06"
Diameter of Wheel Shaft 16" Distance between Centres of Bearings 6' 5 1/2" Diameter of Pitch Circle of Wheel 4 P 5' 2 1/2" Rad 85' 56"
Width of Face 2' Rad 18" Diameter of Thrust Shaft under Collars 14' forward of gear wheel Diameter of Tunnel Shaft as per rule 18' 16"
No. of Screw Shafts One Cent Line Diameter of same as per rule 14' 5 1/2" Diameter of Propeller 17' 6" Pitch of Propeller 16' 6"
No. of Blades 4 State whether Moveable yes Total Surface 90 sq ft Diameter of Rotor Drum, H.P. as fitted 14' 4 1/2" L.P. as per rule 18' 16"
Thickness at Bottom of Groove, H.P. — L.P. — Astern — Revs. per Minute at Full Power, Turbine 4 P 2694 Propeller 885

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		<u>30 1/8" max</u>	<u>2 Row Shaft</u>		<u>42 1/4" max</u>	<u>1 Row Shaft</u>	<u>4 P</u>	<u>32 5/8" max</u>	<u>3 Row Shaft</u>
2ND		<u>29 1/2"</u>	<u>1 Row Shaft</u>		<u>43 7/8"</u>				
3RD		<u>29 1/2"</u>			<u>44 7/8"</u>		<u>L P</u>	<u>46" max</u>	<u>3 Row Shaft</u>
4TH		<u>29 1/2"</u>			<u>45 1/2"</u>				
5TH		<u>29 1/2"</u>			<u>46"</u>				
6TH		<u>30 1/8"</u>			<u>47 1/4"</u>				
7TH									
8TH									

No. and size of Feed pumps Two 12" x 21"
No. and size of Bilge pumps Two 7" x 8" x 8"
No. and size of Bilge suction in Engine Room Four 3 1/2" 4" and 2" etc.
In Holds, &c. 12" 5 1/2" 3" etc.
No. of Bilge Injections two sizes 11" Connected to condenser, or to circulating pump yes Is a separate Donkey Suction fitted in Engine Room & size 7" x 5 1/2"
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 both
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 bunker Gas oil, steam, & water How are they protected 1/2" steel plate covering
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 1st stokehold

BOILERS, &c.—(Letter for record yes) Manufacturers of Steel Beardmore & Spencer
Total Heating Surface of Boilers 10468 sq ft Forced Draft fitted yes No. and Description of Boilers From Single Ended
Working Pressure 200 lbs Tested by hydraulic pressure to 400 lbs Date of test 15.2.21 No. of Certificate 1541, 1547, 1548, 1545.
Can each boiler be worked separately yes Area of fire grate in each boiler 57.42 sq ft No. and Description of Safety Valves to each boiler one opening Area of each valve 7.07" Pressure to which they are adjusted 205 lbs Are they fitted with easing gear yes
Smallest distance between boilers or uptakes and bunkers or woodwork 24" Mean dia. of boilers 15' 9" Length 11' 6" Material of shell plates steel
Thickness 1.9 1/16" Range of tensile strength 29-32 Are the shell plates welded or flanged no Descrip. of riveting: seams all rivet
long. seams all rivet Diameter of rivet holes in long. seams 1.9 1/16" Pitch of rivets 10 1/2" Lap of plates or width of butt straps 22 7/8"
Per centages of strength of longitudinal joint plates 85.11 rivets 86.95 Working pressure of shell by rules 234 lbs Size of manhole in shell 16" x 12"
Size of compensating ring 18" x 30 1/2" x 1.9 1/16" No. and Description of Furnaces in each Boiler 3 Morrison's Material steel Outside diameter 49"
Length of plain part top 11' 6" Thickness of plates bottom 1 1/16" Description of longitudinal joint welded No. of strengthening rings steel
Working pressure of furnace by the rules 227 lbs Combustion chamber plates: Material steel Thickness: Sides 2 1/32" Back 1 1/16" Top 2 1/32" Bottom 1 1/16"
Pitch of stays to ditto: Sides 8 1/4" x 8 3/16" Back 8 7/8" x 8 7/8" Top 9" x 8 1/4" If stays are fitted with nuts or riveted heads no Working pressure by rules 208 lbs
Material of stays steel Diameter at smallest part 2.05" Area supported by each stay 78.75" Working pressure by rules 200 lbs End plates in steam space
Material steel Thickness 1 1/16" Pitch of stays 20" x 16" How are stays secured all rivet Working pressure by rules 204 lbs Material of stays steel
Diameter at smallest part 7.24" Area supported by each stay 320" Working pressure by rules 285 lbs Material of Front plates at bottom steel
Thickness 1 1/16" Material of Lower back plate steel Thickness 1 1/16" Greatest pitch of stays 15 1/2" Working pressure of plate by rules 208 lbs
Diameter of tubes 3" Pitch of tubes 4 1/2" x 4 1/8" Material of tube plates steel Thickness: Front 1 1/16" Back 2 1/32" Mean pitch of stays 8 1/4"
Pitch across wide water spaces 14 1/2" Working pressures by rules 240 lbs Girders to Chamber tops: Material steel Depth and thickness of girder at centre 10 1/2" x 1 1/2" Length as per rule 35" Distance apart 7 1/2" x 9" Number and pitch of stays in each three 8 1/4"
Working pressure by rules 205 lbs Steam dome: description of joint to shell — % of strength of joint — Diameter of rivet holes — Pitch of rivets —
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 —

RETAIN

Is a Report also sent on the Hull of the Ship? If not, state whether, and when, one will be sent?

67400-8637

Lloyd's Register Foundation

SUPERHEATER. Type *Artimon* Date of Approval of Plan *at Newcastle 29/7/19* Tested by Hydraulic Pressure to *400 lbs*

Date of Test *30/3/21 29/4/21 3/5/21 9/5/21* Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *Yes*

Diameter of Safety Valve *2"* *3-1/4 Area* Pressure to which each is adjusted *210 lbs* Is Easing Gear fitted *Yes*

IS A DONKEY BOILER FITTED? *Yes* If so, is a report now forwarded? *Yes*

SPARE GEAR. State the articles supplied:— *5 1/2" Turbine blades, the lot had pieces, 1/2" sets adjusting liners in main and each turbine, Thrust Block, 2 in HP and 2 in LP turbine bearing lugs, the HP and LP steady bearing lugs, the HP and 2 LP 1" reduction pinion lugs, 2 in 2" reduction pinion bearing lugs, the lead reduction S.V. bearing lugs, the HP and 2 LP 1" reduction pinions, 4 sets lot of bearings of cast iron rings and springs in turbine glands, 1/32" total number of bolts & washers for each edge turbine and gear case bearings, the lot turbine blades, 1/2" diameter for adjusting each edge of turbine and pinion bearing lugs, 1/2" diameter for main and gear bearings, 1/2" diameter for regulating and thrust block valves, the propeller the escape valve spring each edge, the gland nut for regulating and thrust block valves, the propeller shaft, the propeller blades, 1/2" diameter, 6 bearing lugs, 24 boiler tubes, 24 large glands, 24 wooden rings, 20 small safety valve springs, 20 lead wire tubes & 60 pins in lead wire, 24 gear in bearings and in all auxiliaries, and as per rules. The blades turbine lugs.*

The foregoing is a correct description, SCOTT'S SHIPBUILDING & ENGINEERING COMPANY, LIMITED. Manufacturer.

J. Philp Commercial Manager

Dates of Survey while building: During progress of work in shops... During erection on board vessel... Total No. of visits *167*

Dates of Examination of principal parts: Casings *2/12/20* Rotors *2/12/20* Blading *3/2/21* Gearing *2/3/21 12/4/21*

Rotor shaft *3/2/21* Thrust shaft *16/3/21* Tunnel shafts *29/10/20* Screw shaft *29/10/20* Propeller *16/3/21*

Stern tube *2/3/20* Steam pipes tested *29/12/20 & 10/4/21* Engine and boiler seatings *26/4/21* Engines holding down bolts *10/6/21*

Completion of pumping arrangements *27/6/21* Boilers fixed *10/6/21* Engines tried under steam *28/6/21*

Main boiler safety valves adjusted *22.25/6/21* Thickness of adjusting washers *FOP 2 1/4 S 1 1/2 FBO 2 1/2 S 1 1/2 FBS 2 1/2 S 1 1/2*

Material and tensile strength of Rotor shaft *Steel 3 1/2 x 18 lws* Identification Mark on Do. *3549 625*

Material and tensile strength of Pinion shaft *Steel 60 lws* Identification Mark on Do. *4711 4712 8011*

Material of Wheel shaft *Steel* Identification Mark on Do. *362 4712* Material of Thrust shaft *Steel* Identification Mark on Do. *362*

Material of Tunnel shafts *Steel* Identification Marks on Do. *362* Material of Screw shafts *Steel* Identification Marks on Do. *362*

Material of Steam Pipes *Iron* Test pressure *600 lbs*

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 Section 49 of the Rules been complied with *Yes*

Is this machinery a duplicate of a previous case *Yes* If so, state name of vessel *'Corinaldo' SA M 17822*

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

The machinery and boilers of this steamer have been constructed under special survey, and placed on board in accordance with the Society's Rules. They are now in my opinion in safe working condition and the case is respectfully submitted for the notification of L.M.C. 6.21, fitted for oil fuel 6.21, F.P. above 150° in the Register Book.

It is submitted that this vessel is eligible for THE RECORD, + L.M.C. 6.21, F.D. CL. 736, N.H.P. 2 steam turbines geared to 1 screw shaft fitted for oil fuel 6.21 F.P. above 150°F.

Table with columns: The amount of Entry Fee, Special, Donkey Boiler Fee, Travelling Expenses (if any), and When applied for/When received.

Roll 9/7/21 James James Engineer Surveyor to Lloyd's Register of Shipping.

MACHINERY CERTIFICATE WRITTEN 19/7/21 dated 6/7/21

Committee's Minute GLASGOW 5-JUL 1921

Assigned + L.M.C. 6.21. F.D.

Fitted for oil fuel 6.21 F.P. above 150°F.



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Port of No. in Reg. Book

Owners Yard No.

DESCRIPTION COMPOUND REC

Capacity of Dy Where is Dyn

Position of Ma Positions of a

If fuses are circuits

If vessel is w Are the fuses

Are all fuses are perm

Are all switch Total number

A 1

B 5

C 2

D 2

E 2

(6-6Lr. Gust

If are lights 6-300

4-16 Where are

DESCRIPTI

Main cable

Branch cable

Branch cable

Leads to lan

Cargo light

DESCRIPTI

FOUND N