

# REPORT ON MACHINERY

Rel. No. 6290  
 attached

No. 2169.

13 SEP. 1923

Date of writing Report 3 Sep 23 When handed in at Local Office 3 Sep 23 Port of Bilbao  
 No. in Survey held at FERROL Date, First Survey Aug. 26<sup>th</sup> 1918 Last Survey 31<sup>st</sup> Aug. 1923  
 Reg. Book. on the Steel Twin Sc. CRISTOBAL COLON (Number of Vials 25 + 8)  
 Master Ferrol Built at Ferrol By whom built Soc. Espanola de Constr. Naval When built 1922  
 Engines made at FERROL By whom made Soc. Espanola de Constr. Naval when made 1922  
 Boilers made at BILBAO By whom made Soc. Espanola de Constr. Naval when made 1922  
 Registered Horse Power NHP 1775 Owners Cia. Transatlantica Port belonging to Buenos Aires  
 Shaft Horse Power at Full Power 8,800 S.H.P. Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes

**TURBINE ENGINES, &c.**—Description of Engines Single reduction geared No. of Turbines 4 (2 Sets)  
 Diameter of Rotor Shaft Journals, H.P. 170 7/8 L.P. 170 7/8 Diameter of Pinion Shaft 150 7/8  
 Diameter of Journals 150 7/8 Distance between Centres of Bearings 857 7/8 Diameter of Pitch Circle 8.59 inches  
 Diameter of Wheel Shaft 380 7/8 Distance between Centres of Bearings 1928 7/8 Diameter of Pitch Circle of Wheel 114.46 inches  
 Width of Face 1474 7/8 Diameter of Thrust Shaft under Collars 375 7/8 Diameter of Tunnel Shaft as per rule 13 3/8  
 No. of Screw Shafts 2 Diameter of same as per rule 14 3/8 as fitted 15 Diameter of Propeller 15'-0" Pitch of Propeller 14'-0"  
 No. of Blades 4 State whether Moveable No Total Surface 68 sq ft Diameter of Rotor Drum, H.P. 680 L.P. 1070 7/8 Astern 700 7/8  
 Thickness at Bottom of Groove, H.P. 162 L.P. 710 Astern 168 7/8 Revs. per Minute at Full Power, Turbine 1830 Propeller 140  
1700 130

## ARTICULARS 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	30.	620	8	52.	1124	2	27	754	2
2ND	38	638	8	64	1148	2	38	776	2
3RD	48	656	8	79	1178	2	54	808	2
4TH	40	760	5	98	1216	2	76	852	2
5TH	49	778	5	120	1260	2	108	916	2
6TH	60	800	5	146	1312	2	108	916	2
7TH	74	828	5	178	1376	2	108	916	2
8TH	90	860	5	216	1452	2			

No. and size of Feed pumps 2 Pairs of twin feed pumps 3 1/2 x 2 1/4 x 6 1/2, 2 Service donkey pumps duplex type 2 1/2 x 1 7/8 x 2 5/8  
 No. and size of Bilge pumps 2 Duplex pumps 1 7/8 x 2 1/4 x 2 1/4  
 No. and size of Bilge suction in Engine Room 6 - 3 1/2 & 3 - 2 3/4 & 1 - 3 1/2 tunnel suction  
 In Holds, &c. No. 1 - 3 1/2 No. 2 - 2 - 2 3/4 & 1 - 3 1/2 No. 3 - 2 - 2 3/4 & 1 - 3 1/2

No. of Bilge Injections 2 sizes 13" Connected to condenser, or to circulating pump Circ. pump Is a separate Donkey Suction fitted in Engine Room & size 4 x 6 1/2, 5 1/2 & 8"  
 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 bunkers Nil How are they protected Yes  
 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 deck

**OILERS, &c.**—(Letter for record (2)) Manufacturers of Steel Henry Albi. Harrow.  
 Total Heating Surface of Boilers 20890 Is Forced Draft fitted Yes No. and Description of Boilers Seven - S.E. marine. 7SB  
 Working Pressure 180 Tested by hydraulic pressure to 360 Date of test See B.L. report No. of Certificates 76, 77, 78, 79, 80, 81, 82  
 Can each boiler be worked separately Yes Area of fire grate in each boiler 68.75 sq ft No. and Description of Safety Valves to each boiler 2 Spring loaded Area of each valve 11.045 Pressure to which they are adjusted 185 lbs Are they fitted with easing gear Yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 2'-0" Mean dia. of boilers 16' 3" Length 11'-7 3/4" Material of shell plates Steel  
 Thickness 1 1/8 Range of tensile strength 29 3/4 - 33 Are the shell plates welded or flanged Yes Descrip. of riveting: cir. seams J.R. lap  
 Long. seams J.B.S. Diameter of rivet holes in long. seams 1 7/16 Pitch of rivets 9 3/4 Lap of plates or width of butt straps 21  
 Percentages of strength of longitudinal joint 84.7 Working pressure of shell by rules 191 Size of manhole in shell 16" x 12"  
 Size of compensating ring 40" x 36" No. and Description of Furnaces in each Boiler 3. Superheated Material Steel Outside diameter 4'-4 1/8"  
 Length of plain part top 41 1/4 bottom 164 Thickness of plates bottom 164 Description of longitudinal joint weld No. of strengthening rings Yes  
 Working pressure of furnace by the rules 199 Combustion chamber plates: Material Steel Thickness: Sides 5/8 Back 5/8 Top 5/8 Bottom 1"  
 Pitch of stays to ditto: Sides 7 1/4 x 8 1/2 Back 8 1/2 x 8 1/2 Top 8 1/2 x 7 1/2 If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 187  
 Material of stays Steel Diameter at smallest part 2.03 Area supported by each stay 7.22 Working pressure by rules 210 End plates in steam space Yes  
 Thickness 1 1/8 Pitch of stays 18 x 15 1/4 How are stays secured Welded Working pressure by rules 216 Material of stays Steel  
 Diameter at smallest part 5.56 Area supported by each stay 274 sq in Working pressure by rules 211 Material of Front plates at bottom Steel  
 Thickness 3/32 Material of Lower back plate Steel Thickness 7/8 Greatest pitch of stays 13 1/2 x 8 1/2 Working pressure of plate by rules 208  
 Diameter of tubes 2 1/2 Pitch of tubes 3 3/4 x 3 3/4 Material of tube plates Steel Thickness: Front 3/32 Back 1/16 Mean pitch of stays 10 1/2  
 Pitch across wide water spaces 13 1/2 Working pressures by rules 210 Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 10" x 1 3/8 Length as per rule 32.762 Distance apart 8 1/2 Number and pitch of stays in each 3 - 2 1/4  
 Working pressure by rules 24 Steam dome: description of joint to shell Yes % of strength of joint Yes Diameter Yes  
 Thickness of shell plates Yes Material Yes Description of longitudinal joint Yes Diameter of rivet holes Yes Pitch of rivets Yes  
 Working pressure of shell by rules Yes Crown plates: Thickness Yes How stayed Yes



TUE. 30 OCT 1923  
 TUES. 24 JUN 1924 TUES. 18 NOV 19  
 TUES. 30 DEC 1924  
 FRI. 1 MAY 1926 WED. 7 APR 1926  
 FRI. 19 JUN 1926 FRI. 30 APR 1926