

REPORT ON MACHINERY.

No. 4391.

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Date of writing Report 17-9-1919 Port of Manchester
 No. in Survey held at Huddersfield Date, First Survey 1-7-19 Last Survey 15-8-1919
 Reg. Book. 3571 on the PORT & STAR? DOUBLE REDUCTION GEARS for the 5 "PORT CAROLINE"
 Master _____ Built at BELFAST By whom built WORKMAN CLARK & CO. When built _____
 Engines made at BELFAST By whom made WORKMAN CLARK & CO. when made _____
 Boilers made at Huddersfield By whom made DAVID BROWN & SONS. Ld when made 8-1919
 Registered Horse Power _____ Owners COMMONWEALTH & DOMINION LINE Port belonging to _____
 Shaft Horse Power at Full Power _____ Is Refrigerating Machinery fitted for cargo purposes _____ Is Electric Light fitted _____

TURBINE ENGINES, &c.—Description of Engines
 Diameter of Rotor Shaft Journals, H.P. _____ L.P. _____ Diameter of Pinion Shaft 1st 4 $\frac{1}{2}$ " 2nd 9 $\frac{1}{4}$ "
 Diameter of Journals 1st 4 $\frac{1}{2}$ " 2nd 9 $\frac{1}{4}$ " Distance between Centres of Bearings 1st 25 $\frac{3}{4}$ " 2nd 59 $\frac{1}{4}$ " Diameter of Pitch Circle 1st 7.06.9.923" 2nd 13.507"
 Diameter of Wheel Shaft 1st 9 $\frac{1}{4}$ " 2nd 14 $\frac{1}{4}$ " Distance between Centres of Bearings 1st 59 $\frac{1}{4}$ " 2nd 62 $\frac{1}{4}$ " Diameter of Pitch Circle of Wheel 1st 45.798" 2nd 87.159"
 Width of Face 1st 15 $\frac{3}{8}$ " 2nd 21" Diameter of Thrust Shaft under Collars _____ Diameter of Tunnel Shaft _____ as per rule _____
 No. of Screw Shafts _____ Diameter of same _____ as per rule _____ as fitted _____ Diameter of Propeller _____ Pitch of Propeller _____
 No. of Blades _____ State whether Moveable _____ Total Surface _____ 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 _____ Propeller _____

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.
ST EXPANSION									
1 st END "									
2 nd END "									
3 rd END "									
4 th END "									
5 th END "									
6 th END "									
7 th END "									

No. and size of Feed pumps

No. and size of Bilge pumps

No. and size of Bilge suction in Engine Room

In Holds, &c.

No. of Bilge Injections _____ sizes _____ Connected to condenser, or to circulating pump _____ Is a separate Donkey Suction fitted in Engine Room & size _____
 Are all the bilge suction pipes fitted with roses _____ Are the roses in Engine room always accessible _____
 Are all connections with the sea direct on the skin of the ship _____ Are they Valves or Cocks _____
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates _____ Are the Discharge Pipes above or below the deep water line _____
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel _____ Are the Blow Off Cocks fitted with a spigot and brass covering plate _____
 What pipes are carried through the bunkers _____ How are they protected _____
 Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times _____
 Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges _____
 Is the Screw Shaft Tunnel watertight _____ Is it fitted with a watertight door _____ worked from _____

BOILERS, &c.—(Letter for record _____) Manufacturers of Steel

Total Heating Surface of Boilers _____ Is Forced Draft fitted _____ No. and Description of Boilers _____
 Working Pressure _____ Tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____
 Can each boiler be worked separately _____ Area of fire grate in each boiler _____ No. and Description of Safety Valves to _____
 Each boiler _____ Area of each valve _____ Pressure to which they are adjusted _____ Are they fitted with easing gear _____
 Smallest distance between boilers or uptakes and bunkers or woodwork _____ Mean dia. of boilers _____ Length _____ Material of shell plates _____
 Thickness _____ Range of tensile strength _____ Are the shell plates welded or flanged _____ Descrip. of riveting: cir. seams _____
 Long. seams _____ Diameter of rivet holes in long. seams _____ Pitch of rivets _____ Lap of plates or width of butt straps _____
 Percentages of strength of longitudinal joint _____ rivets _____ Working pressure of shell by rules _____ Size of manhole in shell _____
 Size of compensating ring _____ No. and Description of Furnaces in each Boiler _____ Material _____ Outside diameter _____
 Length of plain part _____ top _____ crown _____ Thickness of plates _____ Description of longitudinal joint _____ No. of strengthening rings _____
 Working pressure of furnace by the rules _____ Combustion chamber plates: Material _____ Thickness: Sides _____ Back _____ Top _____ Bottom _____
 Pitch of stays to ditto: Sides _____ Back _____ Top _____ If stays are fitted with nuts or riveted heads _____ Working pressure by rules _____
 Material of stays _____ Diameter at smallest part _____ Area supported by each stay _____ Working pressure by rules _____ End plates in steam space _____
 Material _____ Thickness _____ Pitch of stays _____ How are stays secured _____ Working pressure by rules _____ Material of stays _____
 Diameter at smallest part _____ Area supported by each stay _____ Working pressure by rules _____ Material of Front plates at bottom _____
 Thickness _____ Material of Lower back plate _____ Thickness _____ Greatest pitch of stays _____ Working pressure of plate by rules _____
 Diameter of tubes _____ Pitch of tubes _____ Material of tube plates _____ Thickness: Front _____ Back _____ Mean pitch of stays _____
 Pitch across wide water spaces _____ Working pressures by rules _____ Girders to Chamber tops: Material _____ Depth and _____
 Thickness of girder at centre _____ Length as per rule _____ Distance apart _____ Number and pitch of stays in each _____
 Working pressure by rules _____ Steam dome: description of joint to shell _____ % 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 _____ 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? _____ If so, is a report now forwarded? _____

SPARE GEAR. State the articles supplied:—

The foregoing is a correct description,

Signature: *David Brown*
 Manufacturer: **DAVID BROWN & SONS (HUDDERSFIELD) L^{td}**

Dates of Survey while building
 During progress of work in shops -- 1-7-19, 10-7-19, 31-7-19, 6-8-19, 16-8-19.
 During erection on board vessel --
 Total No. of visits

Is the approved plan of main boiler forwarded herewith

" " " donkey " " "

Dates of Examination of principal parts—Casings Rotors Blading Gearing *as above*

Rotor shaft Thrust shaft Tunnel shafts Screw shaft Propeller

Stern tube Steam pipes tested Engine and boiler seatings Engines holding down bolts

Completion of pumping arrangements Boilers fired Engines tried under steam

Main boiler safety valves adjusted Thickness of adjusting washers

Material and tensile strength of Rotor shaft Identification Mark on Do.

Material and tensile strength of Pinion shaft **NICKEL CHROME STEEL 40.2 and 43.6 TONS** Identification Mark on Do. **444 & 421**

Material of Wheel shaft **MILD STEEL** Identification Mark on Do. **LLOYDS 1828 JT** Material of Thrust shaft Identification Mark on Do.

Material of Tunnel shafts Identification Marks on Do. Material of Screw shafts Identification Marks on Do.

Material of Steam Pipes Test pressure

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 Section 49 of the Rules been complied with

Is this machinery a duplicate of a previous case *repair only* If so, state name of vessel

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

The Port and Star double reduction gears have been partly renewed by fitting new primary and secondary pinions, new steel shrouds on the original cast iron centres of the primary and secondary wheels and the gear cut. The materials have been tested in accordance with the rules of the Society; the workmanship and materials are good and eligible in my opinion to be classed with the turbines. The gears have been dispatched to Messrs. Workman Clark & Co. Belfast to be assembled in the gear cases and installed on board this vessel.

The amount of Entry Fee ... £ 5 : 5 : 0 When applied for.
 Special ... £ : : : 17-9-1919.
 Donkey Boiler Fee ... £ : : :
 Travelling Expenses (if any) £ 2 : 3 : 0 When received.
 9-10-1919

Signature: *A. Campbell*
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FEB. 28. 1919

Assigned



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Foundation