

REPORT ON MACHINERY.

No. 8252

Received at London Office SAT. NOV. 22. 1919

Date of writing Report 15th Nov^r 1919 When handed in at Local Office 19 Port of Belfast
 No. in Survey held at Belfast Date, First Survey 27th Nov^r 1918 Last Survey 17th Nov^r 1919
 Reg. Book. on the T.S.S. Port-Caroline (Number of Visits 139)

Gross 8263 Tons
 Net 5708 Tons
 Master A. C. Hoar Built at Belfast By whom built Workman Clark & Coy L^{td} When built 1919
 Engines made at Belfast By whom made - when made -
 Boilers made at - By whom made - when made -
 Registered Horse Power - Owners Commonwealth Dominion Port belonging to London
 Shaft Horse Power at Full Power 5000 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

TURBINE ENGINES, &c.—Description of Engine Twin Screw Double Reduction Gear Turbines No. of Turbines 6
 Diameter of Rotor Shaft Journals, H.P. 3" I.P. 3 1/2" L.P. 6 1/2" Diameter of Pinion Shafts 4 1/2" x 9 1/2"
 Diameter of Journals 4 1/2" x 9 1/2" Distance between Centres of Bearings 12 1/2" x 18 1/2" Diameter of Pitch Circle H.P. 4' 8 1/2" L.P. 9' 9 1/2" 2nd Red. Pinion
 Diameter of Wheel Shaft 14 1/2" x 9 1/2" Distance between Centres of Bearings 59 1/2" x 62 1/2" Diameter of Pitch Circle of Wheels 45' 7 1/2" x 87' 1 1/2"
 Width of Face 16" x 21" Diameter of Thrust Shaft under Collars 13 1/2" Diameter of Tunnel Shaft as per rule 12' 7 1/2"
 No. of Screw Shafts 2 C.L. Diameter of same as fitted 15' 1 1/2" Diameter of Propeller 16' 6" Pitch of Propeller 17' 6"
 No. of Blades 3 State whether Moveable Yes Total Surface 80 sq ft Diameter of Rotor Drum, H.P. 17 1/2" L.P. 35 1/2" 28 1/2" x 43 1/2"
 Thickness at Bottom of Groove, H.P. Solid L. Wheels Astern do Revs. per Minute at Full Power, Turbine H.P. 3600 L.P. 3400 Propeller 85

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									
2ND									
3RD									
4TH									
5TH									
6TH									
7TH									
8TH									

No. and size of Feed pumps 1 New Rotary, 1 New Vertical Feed 10 x 13 1/2 x 24" 1 General 9 x 6 x 10"
 No. and size of Bilge pumps 3: 8 x 10 x 10" 7 x 8 x 8" 4 x 8 x 8"
 No. and size of Bilge suction in Engine Room 9-3 1/2"
 In Holds, &c. 10-3 1/2"

No. of Bilge Injections 2 sizes 10" Connected to condenser, or to circulating pump Pumps Is a separate Donkey Suction fitted in Engine Room & size Yes-3 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 + above
 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 Four hold suction How are they protected Wood casing
 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
 the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Top of Engine Room

BOILERS, &c.—(Letter for record S) Manufacturers of Steel Steel Coy of Scotland L^{td}
 Total Heating Surface of Boilers 12800 sq ft Forced Draft fitted Yes No. and Description of Boilers 4 Single End by Link
 Working Pressure 210 lbs Tested by hydraulic pressure to 420 lbs Date of test 16-6-19 No. of Certificate 545
 Can each boiler be worked separately Yes Area of fire grate in each boiler 80 1/2 sq ft No. and Description of Safety Valves to each boiler 2-Direct Spring Area of each valve 11.04 sq in Pressure to which they are adjusted 215 lbs Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork About 20" Mean dia. of boilers 17'-3" Length 12'-2" Material of shell plates Steel
 Thickness 1 1/2" Range of tensile strength 31-35 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap 1/4"
 long. seam Butt Sella Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10 1/2" Lap of plates or width of butt straps 2 3/4"
 rivets 94.4 Working pressure of shell by rules 247 lbs Size of manhole in shell 16" x 12"
 plates 84.0
 Size of compensating ring No Nails No. and Description of Furnaces in each Boiler 4-Monitors Material Steel Outside diameter 48 1/2"
 Length of plain part top 0 crown 7 1/2" Description of longitudinal joint Weld No. of strengthening rings 0
 bottom 8" bottom 5 1/4"
 Working pressure of furnace by the rules 241 lbs Combustion Chamber plates: Material Steel Thickness: Sides 1/2" Back 3/2" Top 1/2" Bottom 3/2"
 Pitch of stays to ditto: Sides 9 1/2" x 7 1/2" Back Various Top 9 x 6 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 225 lbs
 Material of stay Steel at smallest part 1 1/2" supported by each stay Various Working pressure by rules 246 lbs End plates in steam space
 Material Steel Thickness 1 1/2" Pitch of stays 2 1/2" x 1 1/2" How are stays secured Nuts + Washers Working pressure by rules 217 lbs Material of stays Steel
 Diameter at smallest part 7 1/2" x 8 1/4" supported by each stay 36 1/2 sq in Working pressure by rules 237 lbs Material of Front plates at bottom Steel
 Thickness 1" Material of Lower back plate Steel Thickness 3/2" Greatest pitch of stays 14" x 8 1/2" Working pressure of plate by rules 246 lbs
 Diameter of tubes 3" Pitch of tubes 4 1/2" x 4 1/2" Material of tube plates Steel Thickness: Front 1 1/4" Back 1 1/2" Mean pitch of stays 12 1/2" x 8 1/2"
 Pitch across wide water spaces 14" Working pressures by rules 213 lbs Girders to Chamber tops: Material Steel Depth and
 thickness of girder at centre 1 1/4" x (3/4" x 2) Length as per rule 38 1/2" Distance apart 8 1/2" - 6 1/2" Number and pitch of stays in each 3-9"
 Working pressure by rules 218 lbs Steam dome: description of joint to shell 0 % of strength of joint 0 Diameter 0
 Thickness of shell plates 0 Material 0 Description of longitudinal joint 0 Diameter of rivet holes 0 Pitch of rivets 0
 Working pressure of shell by rules 0 Crown plates: Thickness 0 How stayed 0



SUPERHEATER. Type *Robinson* Date of Approval of Plan Tested by Hydraulic Pressure to *630 lbs*
 Date of Test *11-1-19* Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *Yes*
 Diameter of Safety Valve *1-3* Pressure to which each is adjusted *220 lbs* Is Easing Gear fitted *Yes*

IS A DONKEY BOILER FITTED? *No* If so, is a report now forwarded?

SPARE GEAR. State the articles supplied:— *See other sheet*

The foregoing is a correct description,
FOR WORKMAN, CLARK & CO., LIMITED, Manufacturer.
F. Cunningham

Dates of Survey while building: During progress of work in shops -- *27th Nov 1917 to 11th Nov 1919*
 During erection on board vessel --- *139*
 Total No. of visits *139* Is the approved plan of main boiler forwarded herewith *Yes*
 " " " donkey " " " *Yes*

Dates of Examination of principal parts—Casings *27-6-19* Rotors *27-6-19* Blading *27-6-19* Gearing *27-6-19*
 Rotor shaft *2-5-19* Thrust shaft *27-6-19* Tunnel shafts *13-6-19* Screw shaft *13-6-19* Propeller *13-6-19*
 Stern tube *13-6-19* Steam pipes tested *29-10-19* Engine and boiler seatings *24-6-19* Engines holding down bolts *6-10-19*
 Completion of pumping arrangements *8-10-19* Boilers fixed *6-10-19* Engines tried under steam *8-11-19*
 Main boiler safety valves adjusted *27-10-19* Thickness of adjusting washers *11-15-19*
 Material and tensile strength of Rotor shaft *Ingot Cast 48.8 Tons* Identification Mark on Do. *1414 A.F.*
 Material and tensile strength of Pinion shaft *Nickel Chrome Steel 40.2 & 43.6 tons* Identification Mark on Do. *444-42*
 Material of Wheel shaft *S. Cast* Identification Mark on Do. *LLOYDS 1022 57* Material of Thrust shaft *S. Cast* Identification Mark on Do. *LLOYDS 7.5.3 27-6-19*
 Material of Tunnel shafts *do* Identification Marks on Do. *LLOYDS 7.5.3 13-6-19* Material of Screw shafts *do* Identification Marks on Do. *do*
 Material of Steam Pipes *W. Iron* Test pressure *630 lbs*
 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 Section 49 of the Rules been complied with
 Is this machinery a duplicate of a previous case *Yes - Gearing excepted* If so, state name of vessel *T.S. Port Bowen*

General Remarks (State quality of workmanship, opinions as to class, &c.)
The machinery of this vessel has been constructed under Special Survey and in accordance with the Rules. The workmanship and the materials are of good description, and on trial in Belfast Lough the machinery worked satisfactorily.

In my opinion, it is eligible for record + L.M.C. 11-19, with notation "Forced Draft" "Electric Light" and "Refugeating Machinery"

The Manufacturer's Report No. 4391 on the Lubine replace gearing is enclosed.

The amount of Entry Fee	£ 3	When applied for,	19.11.19.
Special	£ 70	When received,	18/12/19
Donkey Boiler Fee	£ :		
Travelling Expenses (if any)	£ :		

R. J. O'Brien
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI. NOV. 23. 1919*
 Assigned *+ L.M.C. 11.19*

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

630-
Boiler Yes
filled Yes

Rpt. 9a.

SAT NOV. 22. 1919

Port of

Belfast

Continuation of Report No. 8252 dated 15th Nov^r 1919 on the

T.S.S. "Port Caroline"

- Main Circulating Pump. 15" pipe Centrifugal
- Turbine Rotary
- Sux[?] - - - 6" pipe
- 2 Water Extraction Pumps. Turbine driven
- 1 Waste discharge Pump 26" x 14" x 8"
- 1 - Sux[?] - - - 12" x 18" x 10"
- 1 - Feed - - - 10" x 13 1/2" x 24"
- 1 - - - Rotary, Turbine driven
- 1 General Service Pump 9" x 6" x 10"
- 1 Ballast 8" x 10" x 10"
- 1 Sanitary 6" x 7" x 8"
- 1 Wash Deck 7" x 8" x 8"
- 1 Fresh Water 5" x 5" x 8"
- 1 Bilge 7" x 8" x 8"
- 1 Refrigerator Circulating 8 1/2" x 10" x 10"
- 1 Oil Cooling - 6" pipe
- 3 Waste Lubricating oil

Principal Items of Spare Gear

- 1 Propeller Shaft complete
- 2 - blades
- 50 Main Condenser tubes & ferrules
- 9 Bolts & nuts for Tunnel Shaft couplings
- 4 - - - H.P. & I.P. Turbine Shaft couplings
- 9 Propeller blades & studs & nuts
- 1 H.P. pinion & spindle
- 1 L.P. - - -
- 1 Set bearing bushes each size Propeller Shaft
- 1 - - - - - Gear Wheel -
- 1 - - - - - Pinion -
- 1 Set carbon segments for each Turbine gland
- 1 - Springs with attachments complete, each Turbine gland
- 1 - Pads for each size Turbine Thrust block
- 2 Shoes for Main Thrust block
- 1 Escape valve spring each size fitted in Turbines
- 2 Bolts & nuts each size Propeller bearing
- 2 - - - - - Main gear wheel bearing
- 2 - - - - - Pinion
- 20 total bolts & nuts each Gear case joint
- - - - - Turbine -
- Set thermometers oil Circulating system
- Set liners for adjusting block of different thicknesses
- 1 Spare oil lubricating pump complete
- Assorted bolts & nuts

© 2020 Lloyds Register Foundation
R. M. Beveridge

Belfast

T.S.S. Part - Cardons

Principal items of Spare Gear, (Continued)

SAT. NOV. 22. 1919

- Bars of iron of all various sizes
- 100 Fire bars, 30 Boiler tubes
- 2 Safety valve springs Main Boilers
- 9 Elements for Superheaters
- 1 Safety valve spring for Superheaters
- 1 Impeller & spindle Main Circulating Pumps
- Set suction & delivery valves Main Feed
- one - - - General Service -
- - - - - Belts -
- Impeller & spindle for Circulating & oil cooler Circ^l pumps
- Piston valve & spindle - - - - -
- - - - - rods & 1 set Crank pin brasses - - - - -
- Crosshead - - - - -
- First stage steam nozzle for Air Ejectors
- Second - - - - -
- Pump Impeller for Lubrication driven Rotary Feed pump
- Set - packing rings - - - - -
- - - bearings complete - - - - -
- Shaft sleeves & set carbon packing segments - - - - -
- Pump Impeller for Lubrication driven Circulating Pumps
- set shaft sleeves, bearings, carbon packing - - - - -
- Pump Impeller for Water Extraction pumps
- ball bearings, packing rings, shaft sleeves etc -

R. W. Bennett



© 2020

Lloyd's Register Foundation