

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 *10* 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*)
 Master *A. C. Hoak* Built at *Belfast* By whom built *Norwegian Clark & Co. Ltd.* Tons Gross *8263* Net *5708*
 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 Gearing 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" & 9 1/2"* 2nd Red. Pinion
 Diameter of Journals *4 1/2" & 9 1/2"* Distance between Centres of Bearings *12 1/2" & 18 1/2"* Diameter of Pitch Circle H.P. *4' 8 1/2" L.P. 9' 9 1/2" 13' 5 1/2"*
 Diameter of Wheel Shaft *14 1/2" & 9 1/2"* Distance between Centres of Bearings *59 1/2" & 62 1/2"* Diameter of Pitch Circle of Wheels *45' 7 1/2" & 87' 5 1/2"*
 Width of Face *16" & 21"* Diameter of Thrust Shaft under Collars *13 1/2"* Diameter of Tunnel Shaft as per rule *12' 7 1/2"* as fitted *13' 2 1/2"*
 No. of Screw Shafts *2 C.L.* Diameter of same as fitted *15' 12"* 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" & 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 Porting, 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 *Pump* 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 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*
 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^e*
 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* 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 *Hand 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 1/2"*
 long. seams *Butt Lapped* Diameter of rivet holes in long. seams *1 1/2"* Pitch of rivets *10 1/2"* Lap of plates or width of butt straps *23 1/2"*
 rivets *94.4* plates *84.0* Working pressure of shell by rules *247 lbs* Size of manhole in shell *16" x 12"*
 Per centages of strength of longitudinal joint plates *84.0*
 Size of compensating ring *No. Nails* No. and Description of Furnaces in each Boiler *4- Marisow Material Steel* Outside diameter *48 1/2"*
 Length of plain part top *U* bottom *8"* Thickness of plates crown *7 1/2"* bottom *5 1/2"* Description of longitudinal joint *Weld* No. of strengthening rings *✓*
 Working pressure of furnace by the rules *241 lbs* Combustion Chamber plates: Material *Steel* Thickness: Sides *1 1/2"* Back *3 1/2"* Top *1 1/2"* Bottom *3 1/2"*
 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 *Steel*
 Material *Steel* Thickness *1 1/2"* Pitch of stays *2 1/2" x 17"* How are stays secured *By Nuts + Washers* Working pressure by rules *217 lbs* Material of stays *Steel*
 Diameter at smallest part *7 1/2" x 8 1/4"* area supported by each stay *36 1/2 sq* Working pressure by rules *237 lbs* Material of Front plates at bottom *Steel*
 Thickness *1"* Material of Lower back plate *Steel* Thickness *3 1/2"* 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 1/2"* 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 *✓* % of strength of joint *✓* Diameter *✓*
 Thickness of shell plates *✓* Material *✓* Description of longitudinal joint *✓* Diameter of rivet holes *✓* Pitch of rivets *✓*
 pressure of shell by rules *✓* Crown plates: Thickness *✓* How stayed *✓*

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 " " " *✓*

Dates of Examination of principal parts—Casings *27-6-18* Rotors *27-6-18* Gearing *27-6-18*
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 *Kickel 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* Material of Thrust shaft *S. Cast* Identification Mark on Do. *LLOYDS 7.5.3*
Material of Tunnel shafts *do* Identification Marks on Do. *LLOYDS R.S.B. 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 "Refrigerating Machinery"

The Manufacturer's Report N° 4391 on the Lubline replace gearing is enclosed

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

R. F. T. Beveridge
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *ERI NOV. 23. 1919*

Assigned *+ L.M.C. 11.19*



© 2020

Lloyd's Register
Foundation

5m,3,0.-T

ure to 630-0
Boiler Yes
filled Yes

Rpt. 9a.

Port of

Belfast

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

SAT NOV. 22. 1919

T.S.S. Port Caroline

Main Circulating Pump. 15" pipe Centrifugal
Turbine Rotary

- 6" pipe
2 Water Extracting Pumps. Turbine driven
1 Waste dual-hi Pump 26" x 14" x 8"
1 " " " 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 liners each size Rotar 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 Rotar 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

Belfast

Continuation of Report No. 8252 dated 15th Nov^r 1919 on theT. S. S. "Part-Carbons"Principal items of Spare Gear, (Continued)

SAT NOV. 22. 1919

- Bars of iron & steel 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 -
 - - - Bilge -
 - Impeller & spindle for Circulating & oil cooler & gas pumps
 - Piston valve & spindle - - -
 - - - rod & 1 set Crank pin & brasses - - -
 - Crosshead - - -
 - First & 2nd Stage Steam nozzle for Air Ejectors
 - Second - - -
 - Pump Impeller for Lubrication driven Rotary Feed pump
 - Set - packing rings - - -
 - - - bearings complete - - -
 - Shaft & clevis & set Carbon packing segments - - -
 - Pump Impeller for Lubrication driven Circulating Pumps
 - set shaft & clevis, bearings, carbon packing - - -
 - Pump Impeller for Water Extraction pumps
 - ball bearings, packing rings, shaft & clevis etc -

R. M. Bennett