

REPORT ON MACHINERY.

No. 8766

Received at London Office

MON. JUL 10 1922

Date of writing Report 1st July 1922 When handed in at Local Office

Port of Belfast

No. in Survey held at Belfast

Date, First Survey 1920 Jan'y 16th Last Survey 1922 July 4th

Reg. Book.

(Number of Visits 11th)

on the T.S.S. Diogenes

Gross

Net

Master

Built at Belfast

By whom built

Kearland & Wolff L^{td}

When built 1922

Engines made at Belfast

By whom made

when made

Boilers made at

By whom made

when made

Registered Horse Power 1334 N.H.P.

Owner Geo. Thompson & Co L^{td}

Port belonging to Aberdeen

Shaft Horse Power at Full Power 5200

Is Refrigerating Machinery fitted for cargo purposes

Is Electric Light fitted

TURBINE ENGINES, &c.—Description of Engines

No. of Turbines 4

Diameter of Rotor Shaft Journals, H.P. 5 $\frac{1}{2}$ "

L.P. 11"

Diameter of Pinion Shafts 5" & 10 $\frac{1}{2}$ "

Diameter of Journals 5"

Distance between Centres of Bearings 33" & 78 $\frac{1}{2}$ "

Diameter of Pitch Circle 7'9"269" & 13'4"973" & 17'3"884"

Diameter of Wheel Shaft 14 $\frac{1}{2}$ "Distance between Centres of Bearings 87 $\frac{1}{2}$ "

Diameter of Pitch Circle of Wheels 56'137" & 95'5"457"

Width of Faces 17" & 37"

Diameter of Thrust Shaft under Collars 14 $\frac{3}{8}$ "

Diameter of Tunnel Shaft as per rule 12'51"

No. of Screw Shafts 2

Diameter of same as per rule 14'1"

as fitted 15'0"

Diameter of Propeller 17'0"

Pitch of Propeller 18'0"

No. of Blades 3

State whether Moveable Yes

Total Surface 9024 sq. ft.

Mean dia. of Rotor Drum, H.P. 25" L.P. 67 $\frac{1}{2}$ " Astern 54"

Thickness at Bottom of Groove, H.P. r

L.P. v

Astern v

Revs. per Minute at Full Power, Turbine 1833

Propeller 80

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	1" 1 $\frac{1}{2}$ "	26" 26 $\frac{1}{2}$ "	2	2"	56"	1	1" 1 $\frac{1}{2}$ "	52 $\frac{1}{2}$ " 53 $\frac{1}{2}$ " 55 $\frac{1}{2}$ "	3
2ND	1" 1 $\frac{1}{2}$ "	26" 26 $\frac{1}{2}$ "	2	2 $\frac{1}{2}$ "	56"	1	1 $\frac{1}{2}$ " 2 $\frac{1}{2}$ "	53 $\frac{1}{2}$ " 55 $\frac{1}{2}$ "	2
3RD	1 $\frac{1}{2}$ "	26 $\frac{1}{2}$ "	1	3"	56"	1	2 $\frac{1}{2}$ " 4"	55 $\frac{1}{2}$ " 58"	2
4TH	1 $\frac{1}{2}$ "	26 $\frac{1}{2}$ "	1	3 $\frac{1}{2}$ "	56"	1			
5TH	1 $\frac{1}{2}$ "	26 $\frac{1}{2}$ "	1	4"	56"	1			
6TH	2 $\frac{1}{4}$ "	27 $\frac{1}{2}$ "	1	4 $\frac{1}{2}$ "	56 $\frac{1}{2}$ "	1			
7TH	2 $\frac{1}{2}$ "	27 $\frac{1}{2}$ "	1	5"	56 $\frac{1}{2}$ "	1			
8TH	2 $\frac{1}{2}$ "	27 $\frac{1}{2}$ "	1	6 $\frac{1}{2}$ "	57 $\frac{1}{2}$ "	1			
9TH	2 $\frac{1}{2}$ "	27 $\frac{1}{2}$ "	1	8"	57 $\frac{1}{2}$ "	1			
No. and size of Feed pumps	See other sheet			10 $\frac{1}{2}$ "	60 $\frac{1}{2}$ "	1			

No. and size of Bilge pumps

No. and size of Bilge suction in Engine Room 12-3 $\frac{1}{2}$ " 2-2 $\frac{1}{2}$ " & Emergency 2-3 $\frac{1}{2}$ "In Holds, &c. 26-3 $\frac{1}{2}$ " Emergency 10-3 $\frac{1}{2}$ " 1-2 $\frac{1}{2}$ "

No. of Bilge Injections 2 sizes 16" Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine Room & size 3-7"

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 Both

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 Rock Bilge suction

How are they protected With 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

Is the Screw Shaft Tunnel watertight Yes

Is it fitted with a watertight door Yes

worked from Bridge

BOILERS, &c.—(Letter for record 24268)

Manufacturers of Steel G. Colville Sons L^{td}

Total Heating Surface of Boilers 24800 sq. ft. Forced Draft fitted

No. and Description of Boilers 4—D. End Cylinders

Working Pressure 215 lbs

Tested by hydraulic pressure to 430 lbs

Date of test 8-12-21

No. of Certificate 800

Can each boiler be worked separately Yes

Area of fire grate in each boiler 126 $\frac{1}{2}$ sq. ft.

No. and Description of Safety Valves to each boiler 4—Direct Spring

Area of each valve 2 $\frac{1}{2}$ sq. ft.

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 18"

Mean dia. of boilers 15'9"

Length 20'0" Material of shell plates Steel

Thickness 1 $\frac{1}{2}$ "

Range of tensile strength 29-33 Tons

Are the shell plates welded or flanged No

Descrip. of riveting: cir. seams Lap. Sp. J.

long. seams Butt. Double Diameter of rivet holes in long. seams 1 $\frac{1}{2}$ "

Pitch of rivets 10"

Lap of plates or width of butt straps 23 $\frac{1}{2}$ "

Per centages of strength of longitudinal joint rivets 98'8

plates 84'07

Working pressure of shell by rules 221 lbs

Size of manhole in shell 16" x 12"

Size of compensating ring No. 2

No. and Description of Furnaces in each Boiler 6—Murrison

Material Steel Outside diameter 49 $\frac{1}{2}$ "

Length of plain part top 2"

Thickness of plates crown 1 $\frac{1}{2}$ "bottom 1 $\frac{1}{2}$ "

Description of longitudinal joint Neck

No. of strengthening rings 8 to 10

Working pressure of furnace by the rules 228 lbs

Combustion chamber plates: Material Steel

Thickness: Sides 1 $\frac{1}{2}$ "Back 1 $\frac{1}{2}$ "Top 1 $\frac{1}{2}$ "Bottom 1 $\frac{1}{2}$ "Pitch of stays to ditto: Sides 8 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ "Back 9" x 7 $\frac{1}{2}$ "Top 9" x 7 $\frac{1}{2}$ "

If stays are fitted with nuts or riveted heads But inside

Working pressure by rules 219 lbs

Material of stays Steel

Area at smallest part 1'76" x 2'07"

Area supported by each stay 65 $\frac{1}{2}$ "

Working pressure by rules 238 lbs

End plates in steam space

Material Steel

Thickness 1 $\frac{1}{2}$ "Pitch of stays 8 $\frac{1}{2}$ " x 15 $\frac{1}{2}$ "

How are stays secured But inside

Working pressure by rules 215 lbs

Material of stays Steel

Diameter at smallest part 5'93" x 7'04"

Area supported by each stay 29'1 $\frac{1}{2}$ " x 29"

Working pressure by rules 257 lbs

Material of Front plates at bottom Steel

Thickness 1 $\frac{1}{2}$ "

Material of Lower back plate

Thickness 1 $\frac{1}{2}$ "

Greatest pitch of stays

Working pressure of plate by rules

Diameter of tubes 2 $\frac{1}{2}$ "

Pitch of tubes 4" x 4"

Material of tube plates Steel

Thickness: Front 1 $\frac{1}{2}$ "Back 1 $\frac{1}{2}$ "

Mean pitch of stays 8" x 8"

Pitch across wide water spaces 14"

Working pressures by rules 321 lbs

Length as per rule 55 $\frac{1}{2}$ "

Distance apart 9"

Number and pitch of stays in each 6-7 $\frac{1}{2}$ "

Working pressure by rules 266 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

Working pressure of shell by rules

Crown plates: Thickness

How stayed

Lloyd's Register

Foundation

002269-002218-0133

SUPERHEATER. Type *Schmidt* Date of Approval of Plan *✓* Tested by Hydraulic Pressure to *450 lbs*
Date of Test *29-1-22* 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"* Pressure to which each is adjusted *220 lbs. 0"* 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 HARLAND & WOLFF Ltd.

Manufacturer.

Assistant Secretary.

Dates of Survey
During progress of work in shops --
During erection on board vessel --
Total No. of visits

Jan. 16th 1920 to July 4th 1922

114

Is the approved plan of main boiler forwarded herewith *Yes.*

Dates of Examination of principal parts—Casings *4-11-21* Rotors *20-12-21* Blading *11-1-22* Gearing *1-2-22*

Rotor shaft *12-12-21* Thrust shaft *9-1-22* Tunnel shafts *19-1-22* Screw shaft *23-11-21* Propeller *29-11-21*

Stern tube *5-12-21* Steam pipes tested *6-3-22* Engine and boiler seatings *7-1-22* Engines holding down bolts *21-4-22*

Completion of pumping arrangements *22-5-22* Boilers fired *21-4-22* Engines tried under steam *22-5-22*

Main boiler safety valves adjusted *22-6-22* Thickness of adjusting washers *7-13/32"*

Material and tensile strength of Rotor shaft *S. Steel. 35-38 tons* Identification Mark on Do. *W.G.H. 2561-2*

Material and tensile strength of Pinion shaft *Nickel Steel. 43-44.8 tons* Identification Mark on Do. *W.G.H. 5364*

Material of Wheel shaft *S. Steel* Identification Mark on Do. *J.P. 8190-6392* Material of Thrust shaft *S. Steel* Identification Mark on Do. *J.P. 2809-1*

Material of Tunnel shafts *S. Steel* Identification Marks on Do. *9-1-22 R.S.B.* Material of Screw shafts *S. Steel* Identification Marks on Do. *23/11/21 R.S.B. 6389-9*

Material of Steam Pipes *S.D. Steel* Test pressure *1650 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.* If so, state name of vessel *"Sophocles"*

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 our opinion, it is eligible for records + L.M.C.-7,22 with notations "Electric light" and "Refrigeration Machinery"

It is submitted that this vessel is eligible for THE RECORD. F.L.M.C.-7.22. C.L.

4 steam turbines geared to 2 screw shafts.

The amount of Entry Fee ... £ *6 : 0 : 0* When applied for, *7-4-1922*

Special ... £ *133 : 6 : 6*

Donkey Boiler Fee ... £ *✓* When received, *3-8-22*

Travelling Expenses (if any) £ *✓*

A.P. Southwell & R.F. Pennington
Engineer Surveyor to Lloyd's Register of Shipping.

FRI JUL 14 1922

FRI JUL 21 1922

Committee's Minute

Assigned

+ L.M.C. 7.22 C.L.

CERTIFICATE WRITTEN