

Rpt. 4a. **REPORT ON MACHINERY.** No. 8672

Date of writing Report 9-2-22 When handed in at Local Office 10 Port of Belfast
No. in Survey held at Belfast Date, First Survey 16 Jan 1920 Last Survey 2 Feb 1922
Reg. Book. 31343 on the 7. S.S. Sophocles (Number of Visits 128)
Master A. Gilroy Built at Belfast By whom built Harland & Wolff L^{td} Tons } Gross
Engines made at Belfast By whom made Harland & Wolff L^{td} when made 1922 Net
Boilers made at Belfast By whom made Harland & Wolff L^{td} when made 1922
Registered Horse Power 1334 N.H.P. Owners Gen. Thompson & Co L^{td} Port belonging to Herbert
Shaft Horse Power at Full Power 5200 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

TURBINE ENGINES, &c.—Description of Engines Reduction Gearing Turbines No. of Turbines 4
Diameter of Rotor Shaft Journals, H.P. 5 1/2 L.P. 11 Diameter of Pinion Shaft 5 1/2
Diameter of Journals 5 Distance between Centres of Bearings 33 1/4 Diameter of Pitch Circle 7' 9 1/2" x 13' 4 1/2" x 17' 3 1/2"
Diameter of Wheel Shafts 14 1/2 Distance between Centres of Bearings 87 1/2 Diameter of Pitch Circle of Wheel 56' 13 1/2" x 95' 3 1/2" x 7
Width of Faces 17 1/2 Diameter of Thrust Shaft under Collars 14 1/2 Diameter of Tunnel Shaft as per rule 12' 8 1/2"
No. of Screw Shafts 2 Diameter of same as per rule 14 1/2 Diameter of Propeller 17' 0" Pitch of Propeller 18' 0"
No. of Blades 3 State whether Moveable Yes Total Surface 90 sq ft Mean Diameter of Rotor H.P. 25' L.P. 51 1/2' Astern 54'
Thickness at Bottom of Groove, H.P. 1/2 L.P. 1/2 Astern 1/2 Revs. per Minute at Full Power, Turbine 4,000 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' 1/2"	26" 26 1/2"	2	2"	56"	1	7' 1/2"	54 1/2" 55 1/2" 56 1/2"	3
2ND	1' 1/2"	26" 26 1/2"	2	2 1/2"	56"	1	15' 2 1/2"	55 1/2" 56 1/2"	2
3RD	1 1/2"	26 1/2"	1	3"	56"	1	2 1/2" 4"	56 1/2" 58"	2
4TH	1 1/2"	26 1/2"	1	3 1/2"	56"	1			
5TH	1 1/2"	26 1/2"	1	4"	56"	1			
6TH	2 1/2"	27 1/2"	1	4 1/2"	56 1/2"	1			
7TH	2 3/4"	27 3/4"	1	5 1/2"	56 1/2"	1			
8TH	2 1/2"	27 1/2"	1	6 1/2"	57 1/2"	1			
9TH	2 1/2"	27 1/2"	1	8 1/2"	58 1/2"	1			
10TH	2 1/2"	28"	1	10 1/2"	60 1/2"	1			

No. and size of Feed pumps 3
No. and size of Bilge pumps
No. and size of Bilge suction in Engine Room 12-3 1/2" 2-2 1/2" & Emergency 2-3 1/2"
In Holds, &c. 26-3 1/2" & Emergency 70-3 1/2" 7-2 1/2"
No. of Bilge Injections 2 sizes 16" Connected to condenser, or to circulating pump Pumps 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 Yes
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 Hold suction How are they protected Wood & iron casing 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 Bridge

BOILERS, &c.—(Letter for record 3) Manufacturers of Steel D. Colville Sons L^{td} 478 9/158
Total Heating Surface of Boilers 21480 sq ft Forced Draft fitted Yes No. and Description of Boilers 4 Double End Cylinders
Working Pressure 215 lbs Tested by hydraulic pressure to 375 lbs Date of test 9-8-21 No. of Certificate 798
Can each boiler be worked separately Yes Area of fire grate in each boiler 126 1/2 sq ft No. and Description of Safety Valves to each boiler 4 Direct Acting Area of each valve 9' 6 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 1/2" Range of tensile strength 29-33 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap & P
long. seams Butt & Lap Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10" Lap of plates or width of butt straps 23 1/2"
rivets 98' 8" plates 84' 07" Working pressure of shell by rules 221 lbs Size of manhole in shell 16" x 12"
Per centages of strength of longitudinal joint
Size of compensating ring 9 1/2" Nello No. and Description of Furnaces in each Boiler 6 Main & Scum Material Steel Outside diameter 49 1/2"
Length of plain part top 2" crown 3 1/4" bottom 3 1/6" Description of longitudinal joint Weld No. of strengthening rings 375
Working pressure of furnace by the rules 228 lbs Combustion chamber plates: Material Steel Thickness: Sides 3/4" Back 1/2" Top 2 1/2" Bottom 1 1/2"
Pitch of stays to ditto: Sides 8 1/2" x 7 1/2" Top 9" x 7 1/2" If stays are fitted with nuts or riveted heads Nuts inside Working pressure by rules 219 lbs
Material of stays Steel Diameter at smallest part 1 7/8" x 2' 07 1/2" How are stays secured Nuts & screwed into plates Working pressure by rules 215 lbs Material of stays Steel
Material Steel Thickness 1 1/2" Pitch of stay 18 1/2" x 15 1/2" How are stays secured Nuts & screwed into plates Working pressure by rules 215 lbs Material of Front plates at bottom Steel
Diameter at smallest part 5' 9 1/2" x 7' 06 1/2" supported by each stay 29' 1/2" sq Working pressure by rules 251 lbs Material of Front plates at bottom Steel
Thickness 3/4" Material of Lower back plate Steel Thickness 3/4" Greatest pitch of stays 1/2" Working pressure of plate by rules 219 lbs
Diameter of tubes 2 1/2" Pitch of tubes 4" x 4" Material of tube plate Steel Thickness: Front 3/4" Back 1/2" Mean pitch of stays 8" x 8"
Pitch across wide water spaces 14" Working pressures by rules 221 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 8 1/2" x (7 1/2" x 2) Length as per rule 55 1/2" Distance apart 9" Number and pitch of stays in each 6-7 1/2"
Working pressure by rules 266 lbs 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

SUPERHEATER. Type *Schmidt* Date of Approval of Plan ☒ Tested by Hydraulic Pressure to *245 lb sq*
Date of Test *26-9-21* 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 lb* 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.

J.D. Keay Manufacturer.

Dates of Survey *16th Jan^y 1920 to 2 Feb^y 1922*
During progress of work in shops --
During erection on board vessel ---
Total No. of visits *128* Is the approved plan of main boiler forwarded herewith *Yes*

Dates of Examination of principal parts—Casings *15-8-21* Rotors *31-10-21* Blading *31-10-21* Gearing *31-10-21*

Rotor shaft *31-10-21* Thrust shaft *13-1-22* Tunnel shafts *13-1-22* Screw shaft *13-1-22* Propeller *28-7-21*

Stern tube *28-7-21* Steam pipes tested *26-8-21* Engine and boiler seatings *12-9-21* Engines holding down bolts *5-1-22*

Completion of pumping arrangements *2-2-22* Boilers fixed *6-12-21* Engines tried under steam *2-2-22*

Main boiler safety valves adjusted *2-2-22* Thickness of adjusting washers *7-12-21*

Material and tensile strength of Rotor shaft *S. Steel 34'2 x 37'4 tons sq* Identification Mark on Do. *T3164.W.C.H.*

Material and tensile strength of Pinion shaft *S. Steel 44'0 x 44'4 tons sq* Identification Mark on Do. *5410-5409*

Material of Wheel shaft *S. Steel* Identification Mark on Do. *T3480.T3476* Material of Thrust shaft *S. Steel* Identification Mark on Do. *LLOYD 7-7-22*

Material of Tunnel shafts *do* Identification Marks on Do. *do* Material of Screw shafts *do* Identification Marks on Do. *28-7-22*

Material of Steam Pipes *S.D. Steel* Test pressure *650 lbs sq*

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 *No* If so, state name of vessel ☒

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. 2-22, with notation "Electric Light + Refrigerating Machinery"

Committee's Minute

Assigned