SUNDERLAND RPT. NO. 26923

Rpt. 4a.

REPORT ON MACHINERY.

No. 69110

27. FEB 1917
AUG 30 1916

Received at Lloyd's Office THU 31 AUG. 1916

Date of writing Report ____ 19 ____ When handed in at Local Office ____ 19 ____ Port of Newcastle-on-Tyne "Sunderland

No. in Reg. Book. 54 Survey held at Newcastle Date, First Survey 8th Jun 1916 Last Survey 16-2- 1917 (Number of Visits ____)

on the new steel turbine S/S "LORD BYRON" Tons Gross 3250 3200 Net 1935

Master Robertson Built at Sunderland By whom built W. Doxford & Sons Ltd No. 478 When built 1917

Engines made at Newcastle By whom made Parsons Marine Steam Turbine Co No. 5 When made 1916

Boilers made at Sunderland By whom made W. Doxford & Sons Ltd (No. 478) when made 1917

Registered Horse Power ____ Owners Byron S.S. Co Ltd Port belonging to London

Shaft Horse Power at Full Power 1150 Not for Reg. Bk. Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

See Semi-letter E 28-8-14 Re "YESPASIAN"

TURBINE ENGINES, &c.—Description of Engines Geared Turbines No. of Turbines 2

Diameter of Rotor Shaft Journals, H.P. 5" L.P. 5" Diameter of Pinion Shaft 4"

Diameter of Journals 4" Distance between Centres of Bearings 2'-1⅝" Diameter of Pitch Circle ____

Diameter of Wheel Shaft 11" Distance between Centres of Bearings 5'-4¼" Diameter of Pitch Circle of Wheel ____

Width of Face ____ Diameter of Thrust Shaft under Collars 10 7/8" Rule 10.69" Diameter of Tunnel Shaft as per rule 10 3/8" 10.19 as fitted 10 3/8"

No. of Screw Shafts 1 Diameter of same as per rule 11.65" Fitted with continuous liner as fitted 12" Diameter of Propeller 14-6 Pitch of Propeller 3/3/17 13-3

No. of Blades 4 State whether Moveable Yes Total Surface 66 Diameter of Rotor Drum, H.P. 1'-1" L.P. 2'-4" astern 1'-6"

Thickness at Bottom of Groove, H.P. Solid L.P. ½" Astern ⅜" Revs. per Minute at Full Power, Turbine about 1600 Propeller about 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									
2ND "									
3RD "									
4TH "									
5TH "									
6TH "									
7TH "									
8TH "									

No. and size of Feed pumps Two Weirs-5" & 7" × 15"

No. and size of Bilge pumps Weirs 6½ & 6½ × 15". The general service (5 & 7½ × 6) and the ballast (9 & 9 × 9) donkeys also connected to bilge line

No. and size of Bilge suctions in Engine Room 3 @ 3½

In Holds, &c. No. 1 hold - 2@3½". No. 2 hold - 2@3½". No. 3 hold - 2@3½". No. 4 hold - 2@3½". Tunnel well - 1@3".

No. of Bilge Injections 1 sizes 6" Connected to condenser, or to circulating pump CP Is a separate Donkey Suction fitted in Engine Room & size Yes 3½"

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 main discharge below, others 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 forward hold suctions How are they protected under linker boards

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 Top platform

BOILERS, &c.—(Letter for record S) Manufacturers of Steel John Spencer & Sons Ltd.

Total Heating Surface of Boilers 4005 Is Forced Draft fitted No No. and Description of Boilers Two single ended marine

Working Pressure 160 Tested by hydraulic pressure to 320 Date of test 21-10-16 No. of Certificate 33366

Can each boiler be worked separately Yes Area of fire grate in each boiler 53 ☐'

each boiler two direct spring Area of each valve 8.29 ☐" Pressure to which they are adjusted 165 Are they fitted with easing gear Yes

Smallest distance between boilers ~~or uptakes~~ and bunkers ~~or woodwork~~ 19" Mean dia. of boilers 15'-0" Length 10'-0" Material of shell plates Steel

Thickness 1 3/32 Range of tensile strength 29 ¾ to 33 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams DR

long. seams DBS.TR Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 7 7/16" ~~Lap of plates~~ end width of butt straps 16 ¼"

Per centages of strength of longitudinal joint rivets 86.5 plates 85.7 Working pressure of shell by rules 161 Size of manhole in ~~shell~~ end 16 × 12"

Size of compensating ring flange No. and Description of Furnaces in each Boiler 3 Morison Corr Material Steel Outside diameter 3'-9 3/4"

Length of plain part top ____ bottom ____ Thickness of plates crown 1 1/2" bottom 1 1/2" Description of longitudinal joint welded No. of strengthening rings ____

Working pressure of furnace by the rules 165 Combustion chamber plates: Material Steel Thickness: Sides 5/8" Back 5/8" Top 7/8" Bottom 3/4"

Pitch of stays to ditto: Sides 9¼" × 9" Back 9¼" × 9" Top 9" × 9" If stays are fitted with nuts or riveted heads nuts in ccs Working pressure by rules 162

Material of stays Steel ~~Diameter~~ area at smallest part 1.730 ☐" Area supported by each stay 83.20 ☐" Working pressure by rules 166 End plates in steam space

Material Steel Thickness 1 1/32" Pitch of stays 16" × 19" How are stays secured DN Nash Working pressure by rules 161 Material of stays Steel

~~Diameter~~ area at smallest part 5.05 ☐" Area supported by each stay 304 ☐" Working pressure by rules 142 Material of Front plates at bottom Steel

Thickness 15/16" Material of Lower back plate Steel Thickness 13/16" Greatest pitch of stays 14" × 9" Working pressure of plate by rules 164

Diameter of tubes 3¼" Pitch of tubes 4½ × 4½" Material of tube plates S Thickness: Front 15/16" Back ¾" Mean pitch of stays 11¼"

Pitch across wide water spaces 14 ¼" Working pressures by rules 165 Girders to Chamber tops: Material Steel Depth and

thickness of girder at centre 2@4 1/8 × 3/4" Length as per rule 2'-5" Distance apart 9" Number and pitch of stays in each 2@9"

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 ____

If not, state whether, and when, one will be sent.

If a Report also sent on the Hull of the ship.

250, 12, 16.—T.

SUPERHEATER. Type None ✓ 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? yes ✓ If so, is a report now forwarded? yes ✓

SPARE GEAR. State the articles supplied:— Two sets of coupling bolts ✓ one set of feed, bilge and air pump valves ✓ one set of piston and bucket rings and one set of valves for each donkey pump two main check valves and seats ✓ iron and bolts of various sizes ✓ one screw shaft and two cast steel propeller blades. ✓

For Boilers & auxiliaries

For Geared-Turbines

The foregoing is a correct description,

WILLIAM DOXFORD & SONS, Limited.

FOR THE PARSONS MARINE STEAM TURBINE Co. LIMITED

Director

Manufacturer.

DIRECTOR.

Dates of Survey while building — During progress of work in shops: Jan 8. 26. Jul. 18. 31. Aug 3 1916 May 18. Jun 9. 19. Jul. 31. Aug 7. 21. Sep. 14. Oct 9

During erection on board vessel: 16. 21. 24. Nov. 6. 21. 29. Dec 27. 28. Jan 15. 24. 31. Feb 6. 8. 14. 15. 16

Total No. of visits. 29.

Is the approved plan of main boiler forwarded herewith yes ✓

" " " donkey " " " yes ✓

Dates of Examination of principal parts—Casings 8-6-16 Rotors 8-6-16 Blading 8-6-16 Gearing 8-6-16

Rotor shaft 8-6-16 Thrust shaft 16-10-16 Tunnel shafts 6-11-16 Screw shaft 21-11-16 Propeller 6-11-16

Stern tube 9-10-16 Steam pipes tested 27-11-16 & 6-2-17 Engine and boiler seatings 21-11-16 Engines holding down bolts 8-2-17

Completion of pumping arrangements 16-2-17 Boilers fixed 24-2-17 Engines tried under steam 16-2-17

Main boiler safety valves adjusted 8-2-17 Thickness of adjusting washers Port bh - both 11/32". Stbd bh. P 17/64", S 9/32.

Material and tensile strength of Rotor shaft Steel 34 tons Identification Mark on Do. old shaft ✓

Material and tensile strength of Pinion shaft Steel 40 tons Identification Mark on Do. T F 6-16

Material of Wheel shaft Steel Identification Mark on Do. old shaft Material of Thrust shaft S.M. Steel Identification Mark on Do. 4320 GAH

Material of Tunnel shafts S.M. Steel ✓ Identification Marks on Do. 4320 GAH Material of Screw shafts S.M. Steel Identification Marks on Do. 4320 GAH

Material of Steam Pipes Solid drawn copper ✓ Test pressure 320 lbs per □" ✓

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. These turbines & gear wheels were removed from the steamer "Vespasian", have been opened out, examined & overhauled by Patton's Co, the gear wheels recut & new pinion shafts fitted. They have been tried under steam in the shop & found in good order & safe working condition. They are being forwarded to Sunderland to be fitted on board.

Sunderland 21-2-1917. The boilers were constructed and the whole of the machinery fitted, under special survey, the workmanship and materials being good. The machinery is eligible in my Opinion for classification and the record + LMC 2.17

Thomas Field McDavis.

Engineer Surveyor to Lloyd's Register of Shipping.

The amount of Entry Fee ... £ 73 to pay abt When applied for. 27 FEB 1917

Special ... £ 25 Sunderland

Donkey Boiler Fee ... £ 5 Please credit When received.

Travelling Expenses (if any) £ Newcastle with 3/3/17 5/3/17

part fee

Committee's Minute FRI - 2 MAR 1917

Assigned + LMC 2.17

+ NBS. 10 reported 2.17

+ NB 2.17

SUNDERLAND.

(The Surveyors are requested not to write on or below this line. This space for Committee's Minute.)