

Udd. V. 10798.

Rpt. 4a.

REPORT ON MACHINERY

No. 15785

SAT. JUL 3 1920

Date of writing Report 28th June 1920 When handed in at Local Office 2/7/1920 Port of West Hartlepool

No. in Survey held at Hartlepool Date, First Survey 27th June 1918 Last Survey 29th June 1920
Reg. Book. on the (N1) Turbine Engines 5/5 ~~HER WONDER~~ Furness Co's No 16 mt.

Master By whom built Built at Hartlepool By whom made New Richardson, Westgarth & Co. Ltd. (191) when made 1920
Engines made at Hartlepool Boilers made at By whom made when made
Registered Horse Power Owners when made
Shaft Horse Power at Full Power 2900 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted

URBINE ENGINES, &c.—Description of Engines Double reductio Gearing Turbine No. of Turbines Two
Diameter of Rotor Shaft Journals, H.P. 4 1/2 L.P. 5 3/4 Diameter of Pinion Shaft { 1st Pinion 5 3/4 Between Helices
Diameter of Journals { 1st Pinion 4 1/2 Distance between Centres of Bearings { 2nd Pinion 12 1/2 Between Helices
Diameter of Wheel Shaft 5 1/2 Distance between Centres of Bearings { 1st Pinion 6.302
Width of Face { 1st Pinion 18 Diameter of Thrust Shaft under Collars 14 3/4 Diameter of Pitch Circle of Wheel { 1st Pinion 49.656
No. of Screw Shafts one Diameter of same as per rule Diameter of Propeller as fitted Diameter of Tunnel Shaft as per rule 13.125

No. of Blades State whether Moveable Total Surface Diameter of Rotor Drum, H.P. 20 5/16 L.P. 2 1/4 Astern HP 28 1/2
Thickness at Bottom of Groove, H.P. solid L.P. solid Astern Series Revs. per Minute at Normal Full Power, Turbine 3184 Propeller 48
Full Power 3500

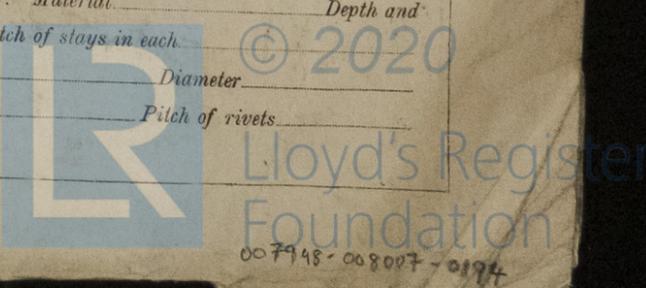
ARTICULARS OF BLADING.

ST EXPANSION	H.P. P.C.D. 24			L.P. P.C.D. 36			ASTERN. { P.C.D. = 30) H.P. { P.C.D. = 39) L.P.		
	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.
1-92-45	3/4 + 1 1/4	24 13/16 + 25 1/4	2	2 3/4	38 3/4	1	5 1/2 + 2 1/8 + 2 3/4	30 7/8 + 32 1/2 + 32 1/2	4
1-20	1 1/2	25 1/2	1	3 7/8	39	1	(i.e. four rows of bucket on one base)	one of each length for H.P. shaft	
20	2	26	1	4 3/4	40 3/4	1			
HP	2 5/16	26 5/16	1	6 1/8	42 1/8	1	15 + 3 1/16 + 4 1/16	40 1/16 + 42 1/16 + 43 1/16	3
LP	2 7/16	26 7/16	1	4 1/2	43 1/2	1	(i.e. three rows of bucket on one base)	one of each length for L.P. shaft	

No. and size of Feed pumps
No. and size of Bilge pumps
No. and size of Bilge suction in Engine Room

In Holds, &c.
of Bilge Injections sizes Connected to condenser, or to circulating pump
all the bilge suction pipes fitted with roses Is a separate Donkey Suction fitted in Engine Room & size
all connections with the sea direct on the skin of the ship Are the roses in Engine room always accessible
they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are they Valves or Cocks
they each fitted with a Discharge Valve always accessible on the plating of the vessel Are the Discharge Pipes above or below the deep water line
at pipes are carried through the bunkers Are the Blow Off Cocks fitted with a spigot and brass covering plate
all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times How are they protected
the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges
the Screw Shaft Tunnel watertight Is it fitted with a watertight door worked from

HEATERS, &c.—(Letter for record) Manufacturers of Steel
Total Heating Surface of Boilers Is Forced Draft fitted No. and Description of Boilers
Working Pressure 190 lb Tested by hydraulic pressure to Date of test No. of Certificate
each boiler be worked separately Area of fire grate in each boiler No. and Description of Safety Valves to
boiler Area of each valve Pressure to which they are adjusted Are they fitted with easing gear
Least distance between boilers or uptakes and bunkers or woodwork Mean dia. of boilers Length Material of shell plates
Thickness Range of tensile strength Are the shell plates welded or flanged Descrip. of riveting: cir. seams
seams Diameter of rivet holes in long. seams Pitch of rivets Lap of plates or width of butt straps
Percentages of strength of longitudinal joint rivets Working pressure of shell by rules Size of manhole in shell plates
of compensating ring No. and Description of Furnaces in each Boiler Material Outside diameter
Length of plain part top crown Thickness of plates Description of longitudinal joint No. of strengthening rings bottom bottom
Working pressure of furnace by the rules Combustion chamber plates: Material Thickness: Sides Back Top Bottom
Height of stays to ditto: Sides Back Top If stays are fitted with nuts or riveted heads Working pressure by rules
Material of stays Diameter at smallest part Area supported by each stay Working pressure by rules End plates in steam space
Material Thickness Pitch of stays How are stays secured Working pressure by rules Material of stays
Diameter at smallest part Area supported by each stay Working pressure by rules Material of Front plates at bottom
Thickness Material of Lower back plate Thickness Greatest pitch of stays Working pressure of plate by rules
Diameter of tubes Pitch of tubes Material of tube plates Thickness: Front Back Mean pitch of stays
to cross wide water spaces Working pressures by rules Girders to Chamber tops: Material Depth and
Thickness of girder at centre Length as per rule Distance apart Number and pitch of stays in each
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



SUPERHEATER. Type _____ 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? _____ If so, is a report now forwarded? _____

SPARE GEAR. State the articles supplied:— _____

The foregoing is a correct description,

Manufacturer.

RICHARDSONS WESTGARTH & CO LIMITED

W. J. Guthrie

TURBINE DEPT

Dates of Survey while building: During progress of work in shops -- 1918. June 27, July 5, Aug 16, Sep 6, 11, 13, 19, Oct 7, 14, 18, 22, 26, Nov 7, 15, 21, 27, Dec 2, 9, 16, 1919. 7, 14, 22, 25, 27, Feb 4, 6, 11, 13, 18, 26, Mar 6, 20, 28, 31, April 8, 25, 26, May 1, 5, 6, 12, 17, 19, 21, 24, 29, June 5, 6, 19, 26, Aug 13, 15, 29, Sep 19, Oct 9, 28, 1920. Jan 4, 8, Mar 29, Apr 14, 26, May 31, June 7, 9, 10. Total No. of visits 66.

Is the approved plan of main boiler forwarded herewith _____

Is the approved plan of donkey boiler forwarded herewith _____

Dates of Examination of principal parts: Casings 27/8/18 to 25/4/19 Rotors 16/8/18 to 17/5/19 Blading 8/9/18 to 4/2/19 Gearing _____

Rotor shaft 16/8/18 to 17/5/19 Thrust shaft _____ Tunnel shafts _____ Screw shaft _____ Propeller _____

Stern tube _____ Steam pipes tested _____ Engine and boiler seatings _____ Engines holding down bolts _____

Completion of pumping arrangements _____ Boilers fixed _____ Engines tried under steam in work 9/6/20

Main boiler safety valves adjusted _____ Thickness of adjusting washers _____

Material and tensile strength of Rotor shaft S.M. steel 34.2 tons Identification Mark on Do. HP = (29) LP = (5)

Material and tensile strength of Pinion shaft See Mech. Report 4529 Identification Mark on Do. 40 and 41

Material of Wheel shaft Identification Mark on Do. Material of Thrust shaft steel Identification Mark on Do. (12105)

Material of Tunnel shafts Identification Marks on Do. Material of Screw shafts Identification Marks on Do.

Material of Steam Pipes _____ Test pressure _____

Is an installation fitted for burning oil fuel _____ 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 _____ If so, state name of vessel (NI) Standard 187-188-189-190.

General Remarks (State quality of workmanship, opinions as to class, &c.)

These Turbine Engines have been built under special survey, the material & workmanship are sound & good. The H.P. casing has been tested to 190 lbs by Hyd. pressure. The L.P. casing to 40 lbs, the Education pipes & Expansion rings to 50 lbs. The H.P. Controlling Valve to 40 lbs. The 2nd & 3rd Expansion separators to 400 lbs, the Nozzle steam pipe to 500 lbs. The Turbines & Reduction gears were tried together in the works at full speed without load & worked satisfactorily in the ahead direction & are eligible in my opinion to have the notation * LMC with 20 when fitted on board.

The amount of Entry Fee ... £ : : When applied for, 22.9.1920 from London. Special ... £ 24-4-3 When received, 19/10/1920 Ebbro. Donkey Boiler Fee ... £ : : Travelling Expenses (if any) £ : :

A. R. Lloyd
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. SEP. 21 1920

Assigned _____

