

# REPORT ON MACHINERY.

Dudb. 10665

WED. APR. 16. 1919

WED. APR. 10

No. 13618

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TUE. MAY 4 1920

Date of writing Report 4<sup>th</sup> April 19 When handed in at Local Office 15/4/19 Port of West Hartlepool  
No. in Survey held at Hartlepool Date, First Survey 27<sup>th</sup> June/19 Last Survey 31<sup>st</sup> March 1919  
Reg. Book. on the (N1) Standard Kenel Pollenzo et War Relief (Number of Visits 46)  
Master \_\_\_\_\_ Built at \_\_\_\_\_ By whom built \_\_\_\_\_ When built \_\_\_\_\_  
Engines made at Hartlepool By whom made Richardsons, Westgarth & Co. Ltd. when made 1919  
Boilers made at \_\_\_\_\_ By whom made \_\_\_\_\_ when made \_\_\_\_\_  
Registered Horse Power \_\_\_\_\_ Owners \_\_\_\_\_ Port belonging to \_\_\_\_\_  
Shaft Horse Power at Full Power \_\_\_\_\_ Is Refrigerating Machinery fitted for cargo purposes \_\_\_\_\_ Is Electric Light fitted \_\_\_\_\_

**TURBINE ENGINES, &c.**—Description of Engines Double geared Impulse Turbines No. of Turbines Two  
Diameter of Rotor Shaft Journals, H.P. 4 1/2 L.P. 5 3/4 Diameter of Pinion Shaft { 1<sup>st</sup> Pinion 5 3/4 between Helices.  
Diameter of Journals { 1<sup>st</sup> Pinion 4 1/2 Distance between Centres of Bearings { 1<sup>st</sup> Pinion 2-3 Diameter of Pitch Circle { 1<sup>st</sup> Pinion 6-302  
Diameter of Wheel Shaft { 2<sup>nd</sup> Pinion 9 3/4 Distance between Centres of Bearings { 2<sup>nd</sup> Pinion 3-10 1/2 Diameter of Pitch Circle of Wheel { 2<sup>nd</sup> Pinion 13-349  
Width of Face { 1<sup>st</sup> Pinion 18 Diameter of Thrust Shaft under Collars 14 3/4 Diameter of Tunnel Shaft { 1<sup>st</sup> Pinion 49-656  
No. of Screw Shafts one Diameter of same as per rule. Diameter of Propeller Pitch of Propeller  
No. of Blades \_\_\_\_\_ State whether Moveable \_\_\_\_\_ Total Surface \_\_\_\_\_ Diameter of Rotor Drum, H.P. 20 5/8 L.P. 2 1/2 astern HP=28 1/2  
Thickness at Bottom of Groove, H.P. solid L.P. solid Astern solid Revs. per Minute at Full Power, Turbine 3187 Propeller 41 LP=36

## PARTICULARS OF BLADING.

	H.P. (PCD=24)			L.P. (PCD=36)			ASTERN. (PCD=30) HP		
	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	<u>3/4 and 1 1/4</u>	<u>24 3/8 and 25 1/8</u>	<u>2</u>	<u>2 3/4</u>	<u>38 3/4</u>	<u>1</u>	<u>1 1/8 + 1 1/8 + 1 1/8</u>	<u>30 1/8 + 31 1/8 + 32 1/8</u>	<u>4</u>
2ND	<u>7/8 and 1 1/2</u>	<u>24 1/8 and 25 1/8</u>	<u>2</u>	<u>3</u>	<u>39</u>	<u>1</u>	(i.e. four rows of bucket on one disc) <u>for HP shaft</u>		
3RD	<u>1 1/2</u>	<u>25 1/8</u>	<u>1</u>	<u>3 7/8</u>	<u>39 7/8</u>	<u>1</u>			
4TH	<u>1 3/4</u>	<u>25 3/8</u>	<u>1</u>	<u>4 1/4</u>	<u>40 1/4</u>	<u>1</u>	<u>1 5/8 + 1 7/8 + 1 5/8</u>	<u>40 1/8 + 42 1/8 + 43 1/8</u>	<u>one of each disc</u>
5TH	<u>2</u>	<u>26</u>	<u>1</u>	<u>6 1/8</u>	<u>42 1/8</u>	<u>1</u>	(i.e. three rows of bucket on one disc) <u>for LP shaft</u>		
6TH	<u>2 1/8</u>	<u>26 5/8</u>	<u>1</u>	<u>4 1/4</u>	<u>43 1/4</u>	<u>1</u>			
7TH	<u>2 7/8</u>	<u>26 7/8</u>	<u>1</u>	<u>4 1/2</u>	<u>43 1/2</u>	<u>1</u>			
8TH				<u>4 3/4</u>	<u>43 3/4</u>	<u>1</u>			

No. and size of Feed pumps \_\_\_\_\_  
No. and size of Bilge pumps \_\_\_\_\_  
No. and size of Bilge suction in Engine Room \_\_\_\_\_  
In Holds, &c. \_\_\_\_\_  
No. of Bilge Injections \_\_\_\_\_ sizes \_\_\_\_\_ Connected to condenser, or to circulating pump \_\_\_\_\_ Is a separate Donkey Suction fitted in Engine Room & size \_\_\_\_\_  
Are all the bilge suction pipes fitted with roses \_\_\_\_\_ Are the roses in Engine room always accessible \_\_\_\_\_  
Are all connections with the sea direct on the skin of the ship \_\_\_\_\_ Are they Valves or Cocks \_\_\_\_\_  
Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates \_\_\_\_\_ Are the Discharge Pipes above or below the deep water line \_\_\_\_\_  
Are they each fitted with a Discharge Valve always accessible on the plating of the vessel \_\_\_\_\_ Are the Blow Off Cocks fitted with a spigot and brass covering plate \_\_\_\_\_  
What pipes are carried through the bunkers \_\_\_\_\_ How are they protected \_\_\_\_\_  
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times \_\_\_\_\_  
Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges \_\_\_\_\_  
Is the Screw Shaft Tunnel watertight \_\_\_\_\_ Is it fitted with a watertight door \_\_\_\_\_ worked from \_\_\_\_\_

## BOILERS, &c.—(Letter for record \_\_\_\_\_) Manufacturers of Steel \_\_\_\_\_

Total Heating Surface of Boilers \_\_\_\_\_ Is Forced Draft fitted \_\_\_\_\_ No. and Description of Boilers \_\_\_\_\_  
Working Pressure 190 # Tested by hydraulic pressure to \_\_\_\_\_ Date of test \_\_\_\_\_ No. of Certificate \_\_\_\_\_  
Can each boiler be worked separately \_\_\_\_\_ Area of fire grate in each boiler \_\_\_\_\_ No. and Description of Safety Valves to \_\_\_\_\_  
Each boiler \_\_\_\_\_ Area of each valve \_\_\_\_\_ Pressure to which they are adjusted \_\_\_\_\_ Are they fitted with easing gear \_\_\_\_\_  
Smallest 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 \_\_\_\_\_  
Long. seams \_\_\_\_\_ Diameter of rivet holes in long. seams \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Lap of plates or width of butt straps \_\_\_\_\_  
Percentage of strength of longitudinal joint \_\_\_\_\_ Working pressure of shell by rules \_\_\_\_\_ Size of manhole in shell \_\_\_\_\_  
Size of compensating ring \_\_\_\_\_ No. and Description of Furnaces in each Boiler \_\_\_\_\_ Material \_\_\_\_\_ Outside diameter \_\_\_\_\_  
Length of plain part \_\_\_\_\_ Thickness of plates \_\_\_\_\_ Description of longitudinal joint \_\_\_\_\_ No. of strengthening rings \_\_\_\_\_  
Working pressure of furnace by the rules \_\_\_\_\_ Combustion chamber plates: Material \_\_\_\_\_ Thickness: Sides \_\_\_\_\_ Back \_\_\_\_\_ Top \_\_\_\_\_ Bottom \_\_\_\_\_  
Pitch 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 \_\_\_\_\_  
Pitch across 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 \_\_\_\_\_

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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.

MANHARDSONS WESTBARTH & CO LIMITED

Manufacturer.

Per. *H. Steel*

TURBINE DEPT

Dates of Survey while building

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

1918. June 27. July 5. Aug 16. 26. Sep 6. 11. 13. 14. 19. 24. Oct 7. 8. 14. 16. 18. 22. 26. 29.  
Nov 2. 7. 21. 27. Dec 2. 9. 16. 1919. Jan 7. 9. 14. 15. 21. 22. 23. 27. 31. Feb 4. 6. 11. 13. 18. 19. 24. 26. Mar

Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts-Casings

27/6/18 to 16/4/18 Rotors

26/8/18 to 16/4/18 Blading

8/9/18 to 16/4/18 Gearing

Rotor shaft 16/8/18 to 9/2/18 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

Main boiler safety valves adjusted

Thickness of adjusting washers

Identification Mark on Do. 187 (23)

Material and tensile strength of Rotor shaft 5 M steel 33.8 tons 34% ext.

Identification Mark on Do. 187 (24)

Material and tensile strength of Pinion shaft Nickel-chrome steel

Identification Mark on Do. 187 (25)

Material of Wheel shaft Light steel Identification Mark on Do. 11-1918 AC

Material of Thrust shaft Light steel Identification Mark on Do. 187 (26)

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

If so, state name of vessel

Is this machinery a duplicate of a previous case

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

These Turbine Engines have been constructed under special Survey. The material & workmanship are sound & good. The H.P. casing has been tested Hydraulic pressure to 190 lbs & the L.P. casing to 40 lbs, all the Exhaust pipes betw. the Casings tested to 50 lbs, the H.P. Controlling Valve to 400 lbs, the Ahead & Astern Separators to 50 lbs & the middle steam pipes to 600 lbs. The turbines & reduction gearing were erected & tried at full speed without load & worked satisfactorily & are eligible in my opinion to be fitted in a Closed Vessel & have the Notation \*LMC with date in Register Book. (The Engineer do not yet know what vessel this is for)

The amount of Entry Fee ... £  
Special ... £  
Donkey Boiler Fee ... £  
Travelling Expenses (if any) ... £

When applied for, 11/5/20 from Lm  
When received, 29/5/20 from Lm

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute  
Assigned

See minute on J.E. rpl.

FRI. MAY. 7 1920



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