

## REPORT ON MACHINERY.

No. 75875

Received at London Office

THU. AUG. 31 1922

Date of writing Report 1922 When handed in at Local Office 28.8.22 Port of NEWCASTLE-ON-TYNE  
No. in Survey held at 36513 on the S.S. British General Date, First Survey 7 April 1921 Last Survey 28 August 1922  
Reg. Book. (Number of Visits 132)  
Master By whom built Palmer Shipbuilding & Iron Co. Ltd. When built 1922  
Engines made at Jarrold By whom made Palmer Shipbuilding & Iron Co. Ltd. when made 1922  
Boilers made at Jarrold By whom made Palmer Shipbuilding & Iron Co. Ltd. when made 1922  
Registered Horse Power 654 for fus Owners British Tanker Co. Ltd. Port belonging to London  
Shaft Horse Power at Full Power 3200 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

TURBINE ENGINES, &c.—Description of Engines HP Impulse & LP Reaction, with double reduction gear No. of Turbines 2 ahead and 2 astern.  
Diameter of Rotor Shaft Journals, H.P. 4 1/2" L.P. 6 1/2" Diameter of Pinion Shaft 2 1/2"  
Diameter of Journals 1st Red 2 1/2" 2nd Red 1 1/2" Distance between Centres of Bearings 28 1/2" Diameter of Pitch Circle 2nd Red 19.8"  
Diameter of Wheel Shaft 1st Red 10 1/2" 2nd Red 10 1/2" Distance between Centres of Bearings 86 1/2" Diameter of Pitch Circle of Wheel 1st Red 59.66" 2nd Red 122.879"  
Width of Face 1st Red 3 1/4" 2nd Red 3 1/4" Diameter of Thrust Shaft under Collars 17" Diameter of Tunnel Shaft as per rule 14.1" as fitted 17"  
No. of Screw Shafts One Diameter of same as per rule 16.55" as fitted 17 1/2" Diameter of Propeller 19 1/2" Pitch of Propeller 18 1/4"  
No. of Blades 4 State whether Movable Yes Total Surface 104 sq ft Diameter of Rotor Drum, H.P. 16" L.P. 38" HP 25 1/16" LP 25 9/16"  
Thickness at Bottom of Groove, H.P. 1 1/8" L.P. 1 1/8" As per rule 1 1/8" Keys per Minute at Full Power, Turbine 48 3856 Propeller 73

PARTICULARS OF BLADING. H.P. L.P. HP Impulse ASTERN. 1 cylinder  
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 15 1/16" 28 3/4" 1 cylinder 1st 2 1/2" 30 1/4" 4 2nd 2 1/2" 31 3/4" 4  
2nd Reaction 15 1/16" 17 7/8" 6 3rd 3 1/2" 32 3/4" 4  
3rd 1 1/4" 18 1/2" 6 4th 4 1/2" 42 3/4" 2  
4th 1 1/16" 19 1/8" 5 5th 5 1/2" 44 1/4" 2  
5th 2" 20" 5 6th 5 3/4" 45 1/2" 1  
6th 2 7/16" 21 1/8" 5 7th 5 3/4" 45 3/4" 1  
7th 2" 21 1/8" 5 8th 5 3/4" 45 3/4" 1  
8th 2" 21 1/8" 5 9th 5 3/4" 45 3/4" 1  
10th 5 3/4" 45 3/4" 1  
11th 5 3/4" 45 3/4" 1

No. and size of Feed pumps One 10 1/2" x 8" x 21" and one electric rotor pump.  
No. and size of Bilge pumps Two, 7" x 1/2" stroke worked from main shaft.  
No. and size of Bilge suction in Engine Room Three, 3 1/2" diameter.  
In Hold forward of oil tanks, Two, 3 1/2" diameter.

No. of Bilge Injections one sizes 11" Connected to condenser, or to circulating pump pump Is a separate Donkey Suction fitted in Engine Room & size yes. 6"  
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 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 one to cofferdam How are they protected Steel pipe  
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. None Is it fitted with a watertight door. worked from

BOILERS, &c.—(Letter for record 5) Manufacturers of Steel Spencer & Langford  
Total Heating Surface of Boilers 5511 sq ft Is Forced Draft fitted yes No. and Description of Boilers three, Single Ended  
Working Pressure 200 lb per sq in Tested by hydraulic pressure to 350 lb per sq in Date of test 14/10/21, 18/11/21 No. of Certificate 9615, 9629, 9631  
Can each boiler be worked separately yes Area of fire grate in each boiler 68 sq ft No. and Description of Safety Valves to each boiler one, direct spring Area of each valve 11.045 sq in Pressure to which they are adjusted 205 lb per sq in Are they fitted with easing gear yes  
Smallest distance between boilers or uptakes and bunkers or woodwork 24" dia. of boilers 15 9/16" Length 12' 6" Material of shell plates Steel  
Thickness 1 3/32" Range of tensile strength 29 to 33 tons per sq in Are the shell plates welded or flanged No Descrip. of riveting: cir. seams 2 R Lap  
long. seams 5 rivets Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 10" Gap of plates on width of butt straps 21 1/4"

Per centages of strength of longitudinal joint rivets 93.42 plates 50.0 Working pressure of shell by rules 203 lb per sq in Size of manhole in shell 16" x 12"  
Size of compensating ring 47" x 33" x 1 1/2" No. and Description of Furnaces in each Boiler 4, Doughton Material Steel Outside diameter 41 5/8"  
Length of plain part top crown bottom Thickness of plates 19/32" Description of longitudinal joint Welded No. of strengthening rings 4  
Working pressure of furnace by the rules 207 Combustion chamber plates: Material Steel Thickness: Sides 23/32" Back 3/4" Top 23/32" Bottom 7/8"  
Pitch of stays to ditto: Sides 10" x 8 3/4" Back 8" x 8" Top 10" x 8 3/4" If stays are fitted with nuts or riveted heads stays on outside Working pressure by rules 202 lb  
Material of stays Steel Diameter at smallest part 1 1/2" Area supported by each stay 69.9" Working pressure by rules 204 lb End plates in steam space  
Material Steel Thickness 1 3/8" Pitch of stays 18" x 25" How are stays secured Double nuts Working pressure by rules 211 lb Material of stays Steel  
Diameter at smallest part 5.450" Area supported by each stay 450 sq in Working pressure by rules 210 Material of Front plates at bottom Steel  
Thickness 1 1/16" Material of Lower back plate Steel Thickness 7/8" Greatest pitch of stays 1 1/4" x 8" Working pressure of plate by rules 234 lb  
Diameter of tubes 3" Pitch of tubes 4 1/4" x 4 1/4" Material of tube plates Steel Thickness: Front 1 1/16" Back 13/16" Mean pitch of stays 2 1/4" x 8 1/2"  
Pitch across wide water spaces 14 1/4" Working pressures by rules 280 lb per sq in Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9" x 1 3/4" Length as per rule 22 9/16" Distance apart 10" Number and pitch of stays in each Three, 8 1/2"  
Working pressure by rules 212 lb per sq in Steam dome: description of joint to shell None % 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 *Robinson's* Date of Approval of Plan *25/2/21* Tested by Hydraulic Pressure to *400 lbs. per sq. in.*

Date of Test *one 21/1/22 to 30/1/22* Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *yes.*  
Diameter of Safety Valve *1 1/2"* Pressure to which each is adjusted *210 lbs. sq. in.* Is Easing Gear fitted *yes.*

IS A DONKEY BOILER FITTED? *yes* If so, is a report now forwarded? *yes*

SPARE GEAR. State the articles supplied:— *All as required by the rules and in addition, one H.P. pinion, one L.P. pinion, 10 1/2 tubes for oil cooler, 24 main condenser tubes, 2 propeller blades, one propeller shaft etc. Rotor shaft and set of vanes for rotary feed pump & rotor vane for main circulating motor driven pump.*

The foregoing is a correct description,

*Palmer's Shipbuilding & Iron Co., Ltd.*

Manufacturer.

*J. Kemp*  
General Manager, Engine Works.

1921  
Dates of Survey while building  
During progress of work in shops -- *Apr. 7, 12, 13, 15, 16, 21, 25, 26, 28, May 3, 4, 25, 27, 31, June 2, 3, 7, 8, 17, July 26, 28, Aug. 2, 4, 15, 17, 19, 23, 26, 30, 31, 24, 28, 15, 21, 22, 23, 30, 1922*  
During erection on board vessel -- *Oct. 5, 19, 21, 26, 28, 31, Nov. 2, 3, 4, 7, 9, 10, 11, 15, 17, 18, 21, 22, 25, 28, 29, Dec. 7, 5, 7, 8, 9, 12, 14, 16, 19, 23, 30, Jan. 5, 6, 9, 13, 24, 30, 31, Feb. 3, 6, 7, 8, 15, 17, 20, 23, 27, Mar. 5, 10, 25, 27, 28, 31, Apr. 5, 6, 10, 12, 15, 20, 24, 25, 28, May 4, 10, 12, 15, 26, 30, June 2, 4, 12, 27, 29, 30, July 2, 5, 6, 7, 8, 10, 12, 13, 17, 18, 21, 25, Aug. 2, 4, 9, 11, 15, 23, 25, 1922*  
Total No. of visits *132*

Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts—Casings *17. 2. 22* Rotors *20. 4. 22* Blading *20. 4. 22* Gearing *6. 11. 22*

Rotor shaft *23. 8. 21* Thrust shaft *12. 12. 21* Tunnel shafts *12. 12. 21* Screw shaft *15. 11. 21* Propeller *16. 12. 21*

Stern tube *22. 11. 21* Steam pipes tested *4. 4. 22* Engine and boiler seatings *10. 11. 21* Engines holding down bolts *26. 5. 22*

Completion of pumping arrangements *3. 8. 22* Boilers fixed *6. 6. 22* Engines tried under steam *3. 8. 22*

Main boiler safety valves adjusted *3. 8. 22* Thickness of adjusting washers *Port Boiler P 7/16 5/16 SUPERHEATER VALVES 7/16 F 7/16 A 1/4*

Material and tensile strength of Rotor shaft *S.M. STEEL 36"* Identification Mark on Do. *5905 N.*

Material and tensile strength of Pinion shaft *NICKEL STEEL 42 to 44"* Identification Mark on Do. *316, 317, 318, 319, 3122, 3123*

Material of Wheel shaft *S.M. STEEL* Identification Mark on Do. *5905 N.* Material of Thrust shaft *S.M. STEEL* Identification Mark on Do. *5965 N.*

Material of Tunnel shafts *S.M. STEEL* Identification Marks on Do. *5965 N.* Material of Screw shafts *S.M. STEEL* Identification Marks on Do. *5965 N.*

Material of Steam Pipes *SOLID DRAWN STEEL* Test pressure *600 lbs. sq. in.*

Is an installation fitted for burning oil fuel *YES* Is the flash point of the oil to be used over 150°F. *YES*

Have the requirements of Section 49 of the Rules been complied with *YES*

The main feed pump, forced draught fan and main circulating pumps are driven by electric motor.

Is this machinery a duplicate of a previous case *YES* If so, state name of vessel *'BRITISH MARINER'*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The machinery of this vessel has been built under*

*Special Survey. The materials and workmanship are of good quality. It has been securely fitted on board and*

*tried out under working conditions. In my opinion the machinery of this vessel is now eligible for*

*record + L.M.C. 8.22 in red. M.B. p. 200 LBS. D.B. p. 120 LBS. fitted for oil fuel burning, F.P. above 150°F in the*

*Register Book.*

*It is submitted that this vessel is eligible for*

*THE RECORD. + LMC 8.22. F.D. OG.*

*2 Steam turbines geared to 1 Screw shaft.*

*Fitted for oil fuel 8.22. F.P. above 150°F.*

*3/8/22*

*Es. Murdoch*

*Engine Surveyor to Lloyd's Register of Shipping.*

The amount of Entry Fee ... £ *6 : 0 :*

Special ... £ *107 : 14 :*

Donkey Boiler Fee ... £ *✓*

Travelling Expenses (if any) £ *✓*

Committee's Minute

Assigned

*+ L.M.C. 8.22. F.D.*

*Fitted for oil fuel 8.22*

*F.P. above 150°F.*



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