

## REPORT ON MACHINERY.

No. 73010

SAT. APR. 24 1920

Received at London Office

of writing Report *10th April 20* When handed in at Local Office *10th April 20* Port of *NEWCASTLE-ON-TYNE*

in Survey held at *Jarrow on Tyne* Date, First Survey *26th Aug 19* Last Survey *30th Mar 1920*

Book. *21* on the *S. S. HAT Bharata* (Number of Visits *64*)

ster Built at *Jarrow* By whom built *Palmer S B & Son Ltd* Tons { Gross *5570* Net *3430* When built *1920*

ines made at *Jarrow* By whom made *Palmer Shipbuilding & Iron Co Ltd* When made *1920*

lers made at *Jarrow* By whom made *do* when made *1920*

istered Horse Power Owners *The Shipping Controller* Port belonging to *London*

n. Horse Power as per Section 28 *517* Is Refrigerating Machinery fitted for cargo purposes *No* Is Electric Light fitted *yes*

GINES, &c.—Description of Engines *Triple Expansion* No. of Cylinder *Three* No. of Cranks *3*

a. of Cylinders *27" 44" & 73"* Length of Stroke *48"* Revs. per minute *77* Dia. of Screw shaft *as per rule 14 1/2"* Material of *Steel*

the screw shaft fitted with a continuous liner the whole length of the stern tube *yes* Is the after end of the liner made water tight

the propeller boss *yes* If the liner is in more than one length are the joints burned *✓* If the liner does not fit tightly at the part

ween the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive *✓* If two

ers are fitted, is the shaft lapped or protected between the liners *✓* Length of stern bush *5'-0 1/2"*

a. of Tunnel shaft *as per rule 13 3/4"* Dia. of Crank shaft journals *as per rule 14 1/2"* Dia. of Crank pin *14 1/2"* Size of Crank webs *28" x 9"* Dia. of thrust shaft under

lars *14 3/4"* Dia. of screw *17-6"* Pitch of Screw *16-6"* No. of Blades *4* State whether moveable *No* Total surface *98.2 sq ft*

a. of Feed pumps *2* Diameter of ditto *4"* Stroke *24"* Can one be overhauled while the other is at work *yes*

a. of Bilge pumps *2 1/2"* Diameter of ditto *4"* Stroke *24"* Can one be overhauled while the other is at work *yes*

a. of Donkey Engines *Four* Sizes of *Ballast 10 1/2" x 14" x 24"* No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room *Four 3 1/2" diameter* In Holds, &c. *No 3 1/2" in fore hold, One 3" in cross*

in Keel, *Two 2 1/2" to after flat and one 2 1/2" in tunnel well.*

a. of Bilge Injections *1 size 13"* Connected to condenser, or to circulating pump *Pump* Is a separate Donkey Suction fitted in Engine room & size *yes, 3 1/2"*

re all the bilge suction pipes fitted with roses *yes* Are the roses in Engine room always accessible *yes* Are the sluices on Engine room bulkheads always accessible *None*

re all connections with the sea direct on the skin of the ship *yes* Are they Valves or Cocks *Both* Main discharge below

re 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 *all others above*

re 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*

That pipes are carried through the bunkers *None* How are they protected *✓*

re all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times *yes*

re the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges *yes*

the Screw Shaft Tunnel watertight *yes* Is it fitted with a watertight door *No* worked from *Entry by chute at*

ILERS, &c.—(Letter for record *S S* Manufacturers of Steel *Spencer & Sons Ltd* *3 S B*

otal Heating Surface of Boilers *7668 sq ft* Is Forced Draft fitted *yes* No. and Description of Boilers *3 Single Ended*

orking Pressure *180 lbs* Tested by hydraulic pressure to *360 lbs* Date of test *6/6/19* No. of Certificate *9246*

an each boiler be worked separately *yes* Area of fire grate in each boiler *63.3 sq ft* No. and Description of Safety Valves to

ch boiler *No, direct spring* Area of each valve *9.62 sq in* Pressure to which they are adjusted *185 lbs* Are they fitted with easing gear *yes*

smallest distance between boilers or uptakes and bunkers or woodwork *30"* Mean dia. of boilers *15-6"* Length *11-6"* Material of shell plates *Steel*

Thickness *1 1/4"* Range of tensile strength *27/32 ton* Are the shell plates welded or flanged *No* Descrip. of riveting: cir. seams *2 R Lap*

mg. seams *Double straps* Diameter of rivet holes in long. seams *1 5/16"* Pitch of rivets *9/8"* Top of plates or width of butt straps *19 1/2"*

er centages of strength of longitudinal joint *88.3* Working pressure of shell by rules *182 lbs* Size of manhole in *end 16" x 12"*

Size of compensating ring *flanged 24 sq in* No. and Description of Furnaces in each boiler *3 Brighton* Material *Steel* Outside diameter *50 3/16"*

Length of plain part *top 19 1/2"* Thickness of plates *bottom 19 1/2"* Description of longitudinal joint *Welded* No. of strengthening rings *✓*

Working pressure of furnace by the rules *188* Combustion chamber plates: Material *Steel* Thickness: Sides *23/32"* Back *11/16"* Top *23/32"* Bottom *23/32"*

Pitch of stays to ditto: Sides *11 3/2" x 8 3/4"* Back *10 1/4" x 8 3/4"* Top *10 5/8" x 9 1/4"* If stays are fitted with nuts or riveted heads *Nuts inside* Working pressure by rules *180*

Material of stays *Steel* Area at smallest part *2 7/8 sq in* Area supported by each stay *104 sq in* Working pressure by rules *219* End plates in steam space:

Material *Steel* Thickness *1 1/32"* Pitch of stays *20 1/2" x 21 1/2"* How are stays secured *Double nuts* Working pressure by rules *192* Material of stays *Steel*

Area at smallest part *8.48 sq in* Area supported by each stay *446 sq in* Working pressure by rules *199* Material of Front plates at bottom *Steel*

Thickness *3 1/32"* Material of Lower back plate *Steel* Thickness *2 7/32"* Greatest pitch of stays *13 5/8" x 5 3/4"* Working pressure of plate by rules *187*

Diameter of tubes *2 3/4"* Pitch of tubes *4" x 3 3/8"* Material of tube plates *Steel* Thickness: Front *3 1/32"* Back *3/4"* Mean pitch of stays *9 7/8"*

Pitch across wide water spaces *13 5/8"* Working pressures by rules *181 lbs* Girders to Chamber tops: Material *Steel* Depth and

ickness of girder at centre *10" x 1 3/4"* Length as per rule *35 9/16"* Distance apart *10 7/8"* Number and pitch of stays in each *Three, 9 1/4"*

Working pressure by rules *187 lbs* Steam dome: description of joint to shell *None* % of strength of joint *✓*

Diameter *✓* Thickness of shell plates *✓* Material *✓* Description of longitudinal joint *✓* Diam. of rivet holes *✓*

Pitch of rivets *✓* Working pressure of shell by rules *✓* Crown plates *✓* Thickness *✓* How stayed *✓*

UPERHEATER. Type *None* Date of Approval of Plan *✓* Tested by Hydraulic Pressure to *2020*

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:

Two top and two bottom end connecting rod bolts and nuts, two main bearing bolts & nuts, one set of coupling bolts & nuts, one feed pump suction and one discharge valve, one bilge pump suction & one discharge valve, three main and three donkey check valves, 24 assorted bolts & nuts, 6 cylinder cover studs and nuts, 6 steam chest cover studs and nuts, 12 junk ring studs and nuts, 5 bars round iron 3/8", 1/2", 5/8", 3/4" and 1", one propeller etc.

For The foregoing is a correct description,

Palmer's Shipbuilding & Iron Co., Ltd.

Manufacturer.

General Manager, Engine Works

Dates of Survey while building  
During progress of work in shops - - -  
During erection on board vessel - - -  
Total No. of visits

Is the approved plan of main boiler forwarded herewith

" " " donkey " " "

Dates of Examination of principal parts - Cylinders 22/5/19 Slides 17/9/19 Covers 17/9/19 Pistons 17/9/19 Rods 28/10/19

Connecting rods 28/10/19 Crank shaft 22/5/19 Thrust shaft 22/5/19 Tunnel shafts 22/5/19 Screw shaft 18/6/19 Propeller 18/7/19

Stern tube 3/11/19 Steam pipes tested 16/10, 7/11/19 Engine and boiler seatings 5/12/19 Engines holding down bolts 5/12/19

Completion of pumping arrangements 30/3/20 Boilers fixed 5/1/20 Engines tried under steam 19/2/20

Completion of fitting sea connections 12/11 + 28/11/19 Stern tube 12/11/19 Screw shaft and propeller 12/11, 28/11/19

Main boiler safety valves adjusted 19/2/20 Thickness of adjusting washer PB 17/32" 15/32" CB 1/2" 15/32" SB 1/2" 15/32"

Material of Crank shaft Steel Identification Mark on Do 11/7/19 GM Material of Thrust shaft Steel Identification Mark on Do 11/7/19 GM

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

Material of Steam Pipes Steel & Copper Test pressure 540 + 360 lb per sq. in. respectively

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

Is this machinery duplicate of a previous case If so, state name of vessel L. H. M. S. 72583

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 satisfactorily

tried under full steam at a morning trial burning coal and later at

a full speed trial in the North Sea burning oil.

The main tanks, suction & discharge pipes were tested to 125 lb

per sq. in. and the oil burning pipes to 300 lb per sq. in.

The machinery of this vessel is now in my opinion eligible

for record: L. H. C. 3.20 (m red) fitted for oil fuel above 150

degrees F. 3.20 in the register book

5 forging & castings reports. 2 invoices for furnaces and steel test

flintstones now forwarded.

It is submitted that this vessel is eligible for

THE RECORD + L.M.C 3.20. F.D

FITTED FOR OIL FUEL 3.20 F.P. ABOVE 150°F. Well 26/4/20

The amount of Entry Fee ... £ : : When applied for,

Special ... £ 146 : 10 : 17. Mar 1920

Donkey Boiler Fee ... £ : : When received,

Travelling Expenses (if any) £ : : 26/4/20

Committee's Minute TUE. APR 27 1920

Assigned + L.M.C 3.20 F.D

Fitted for Oil Fuel 3.20 F.P. above 150°F

George Murdoch Engineer Surveyor to Lloyd's Register of Shipping.

CERTIFICATE WRITTEN

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