

Rpt. 4.

REPORT ON MACHINERY.

No. 14541

Received at London Office

SAT. NOV. 23. 1912

Date of writing Report 16 Nov 1912 When handed in at Local Office 16 Nov 1912 Port of West Hartlepool
No. in Survey held at West Hartlepool Date, First Survey 24th May Last Survey 16 Nov 1912
Reg. Book. on the Steel Steamer "Arakara" Number of Visits 100

Master Built at West Hartlepool By whom built W. Hay & Co. Ltd When built 1912

Engines made at West Hartlepool By whom made Central Marine & Water when made 1912

Boilers made at West Hartlepool By whom made Central Marine & Water when made 1912

Registered Horse Power Owners Chancellor & 320 11/134 Port belonging to Rotterdam

Nom. Horse Power as per Section 28 620 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Triple Compound No. of Cylinders Three No. of Cranks Three
Dia. of Cylinders 28" 46" 77" Length of Stroke 48" Revs. per minute 65 Dia. of Screw shaft 15.87" Material of Steel
as fitted 16" screw shaft

Is 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

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

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

liners are fitted, is the shaft lapped or protected between the liners Cedarwood Length of stern bush 65"

Dia. of Tunnel shaft 13.49" as per rule 14.35" Dia. of Crank shaft journals 14.35" as fitted 14.35" Dia. of Crank pin 14 1/2" Size of Crank webs 21.85" Dia. of thrust shaft under

collars 14 1/2" Dia. of screw 18.0" Pitch of Screw 17.0" No. of Blades 4 State whether moveable yes Total surface 104 sq ft

No. of Feed pumps Two Diameter of ditto 4 1/2" Stroke 32" Can one be overhauled while the other is at work yes also see C.M.C.W.

No. of Bilge pumps Two Diameter of ditto 4 1/2" Stroke 32" Can one be overhauled while the other is at work yes

No. of Donkey Engines Two Sizes of Pumps 1 1/2" 10" 5" 6" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Three 3 1/2" In Holds, &c. Eight 3 1/2" also see C.M.C.W.

No. of Bilge Injections one sizes 10" Connected to condenser, or to circulating pump yes Is a separate Donkey Suction fitted in Engine room of size one 3 1/2"

Are 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 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 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 How are they protected

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

Dates of examination of completion of fitting of Sea Connections 23/9/12 of Stern Tube 4/10/12 Screw shaft and Propeller 12/10/12

Is the Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Loft Stair Room

BOILERS, &c.—(Letter for record S) Manufacturers of Steel J. Chance & Sons converted to 3 main & 1 donkey 11/134

Total Heating Surface of Boilers 9637 Is Forced Draft fitted yes No. and Description of Boilers Four single Ended

Working Pressure 180 lb Tested by hydraulic pressure to 360 lb Date of test 18/10/12 No. of Certificate 3304

Can each boiler be worked separately yes Area of fire grate in each boiler 55 1/2 sq ft No. and Description of Safety Valves to

each boiler Two Spring Area of each valve 11.04 Pressure to which they are adjusted 185 lb Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 26" Mean dia. of boilers 14.6" Length 11.6" Material of shell plates steel

Thickness 1 1/8" Range of tensile strength 22,500 Are the shell plates welded or flanged both Descrip. of riveting: cir. seams all in end

long. seams all in end Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 9 5/8" Lap of plates or width of butt straps 20 1/2"

Per centages of strength of longitudinal joint 85.4 Working pressure of shell by rules 203 lb Size of manhole in shell 16" x 12"

Size of compensating ring 32" x 28" x 1 1/4" No. and Description of Furnaces in each boiler Three main Material steel Outside diameter 44 1/8"

Length of plain part top 7 1/2" Thickness of plates bottom 7 1/2" Description of longitudinal joint held No. of strengthening rings none

Working pressure of furnace by the rules 197 lb Combustion chamber plates: Material steel Thickness: Sides 2 1/2" Back 1 1/2" Top 2 1/2" Bottom 1 1/2"

Pitch of stays to ditto: Sides 8 1/2" Back 8 1/2" Top 8 1/2" If stays are fitted with nuts or riveted heads both Working pressure by rules 186 lb

Material of stays steel Diameter at smallest part 1 1/2" Area supported by each stay 8 1/2" Working pressure by rules 198 lb Material of stays steel

Material steel Thickness 1 1/2" Pitch of stays 20" x 19" How are stays secured all nut Working pressure by rules 198 lb Material of Front plates at bottom steel

Diameter at smallest part 3.16" Area supported by each stay 20" x 19" Working pressure by rules 214 lb Material of Front plates at bottom steel

Thickness 1 1/2" Material of Lower back plate steel Thickness 1 1/2" Greatest pitch of stays 16 1/2" Working pressure of plate by rules 180 lb

Diameter of tubes 2 1/2" Pitch of tubes 3 1/2" Material of tube plates steel Thickness: Front 1 1/2" Back 1 1/2" Mean pitch of stays 7 1/2"

Pitch across wide water spaces 15 1/2" Working pressures by rules 185 lb Girders to Chamber tops: Material steel Depth and

thickness of girder at centre 8 1/2" x 1 1/2" Length as per rule 29 7/8" Distance apart 8 1/2" Number and pitch of stays in each see 8 1/2"

Working pressure by rules 185 lb Superheater or Steam chest; how connected to boiler Can the superheater be shut off and the boiler worked

separately yes Diameter Length Thickness of shell plates Material Description of longitudinal joint Diam. of rivet

holes Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness

If stiffened with rings Distance between rings Working pressure by rules End plates: Thickness How stayed

Working pressure of end plates Area of safety valves to superheater Are they fitted with easing gear

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VERTICAL DONKEY BOILER—

Manufacturers of Steel

None

| | | | | | |
|--------------------------------------|--|---------------------------|-------------------------------------|----------------------------------|-----------------------|
| No. | Description | | | | |
| Made at | By whom made | | When made | Where fixed | |
| Working pressure | tested by hydraulic pressure to | Date of test | No. of Certificate | Fire grate area | Description of Safety |
| Valves | No. of Safety Valves | Area of each | Pressure to which they are adjusted | Date of adjustment | |
| If fitted with easing gear | If steam from main boilers can enter the donkey boiler | | Dia. of donkey boiler | Length | |
| Material of shell plates | Thickness | Range of tensile strength | Descrip. of riveting long. seams | | |
| Dia. of rivet holes | Whether punched or drilled | Pitch of rivets | Lap of plating | Per centage of strength of joint | Rivets Plates |
| Working pressure of shell by rules | Thickness of shell crown plates | Radius of do. | No. of stays to do. | Dia. of stays | |
| Diameter of furnace Top | Bottom | Length of furnace | Thickness of furnace plates | Description of joint | |
| Working pressure of furnace by rules | Thickness of furnace crown plates | Radius of do. | Stayed by | | |
| Diameter of uptake | Thickness of uptake plates | Thickness of water tubes | Dates of survey | | |

SPARE GEAR. State the articles supplied:— *Two top end bolts, Two bottom end bolts, Two main bearing bolts, One set coupling bolts, One set dead pump valves, One set bridge pump valves, One set of piston springs, One propeller shaft, Two propeller blades, 1/2 crank shaft, One pump bucket, Rod, Curved at my pump bucket rod, set safety valve springs bolts nuts.*

The foregoing is a correct description,

James Limer
Manufacturer.

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|--------------------------------|-------------------------------------|--|
| Dates of Survey while building | During progress of work in shops -- | May 24 30 31 Jun 3 4 5 6 7 10 11 12 13 14 18 19 20 21 24 25 26 27 28 Jul 1 2 4 5 8 9 10 11 12 15 16 17 18 19 20 22 23 24 25 26 27 29 31 |
| | During erection on board vessel -- | Aug 1 2 15 16 19 20 21 22 23 26 27 28 30 Sep 2 3 4 5 6 9 10 11 12 13 16 17 18 20 23 24 25 26 27 30 Oct 2 3 4 9 12 14 17 18 23 29 30 31 Nov 1 4 5 6 7 12 13 15 16 |
| | Total No. of visits | 100 |

Is the approved plan of main boiler forwarded herewith *Yes*

| | | | | | | | | | |
|---|----------|--------------------------------|---|----------------------------|----------|----------------------------|---------|-------------|---------|
| Dates of Examination of principal parts—Cylinders | 2/9/12 | Slides | 2/9/12 | Covers | 2/9/12 | Pistons | 2/9/12 | Rods | 30/6/12 |
| Connecting rods | 4/9/12 | Crank shaft | 30/6/12 | Thrust shaft | 30/6/12 | Tunnel shafts | 9/10/12 | Screw shaft | 8/9/12 |
| Stern tube | 26/9/12 | Steam pipes tested | 29/10/12 5/11/12 | Engine and boiler seatings | 4/10/12 | Engines holding down bolts | 9/10/12 | | |
| Completion of pumping arrangements | 12/11/12 | Boilers fixed | 12/11/12 | Engines tried under steam | 12/11/12 | | | | |
| Main boiler safety valves adjusted | 12/11/12 | Thickness of adjusting washers | P 27/32 S 13/16 P 13/16 S 13/16 P 13/16 S 23/32 P 13/16 S 13/16 | | | | | | |

Material of Crank shaft *Steel* Identification Mark on Do. *5203* Material of Thrust shaft *Steel* Identification Mark on Do. *5203*
Material of Tunnel shafts *Steel* Identification Marks on Do. *5203* Material of Screw shafts *Steel* Identification Marks on Do. *5203*
Material of Steam Pipes *Main Steel Annul Copper* Test pressure *Main boiler Copper 450 lb*
One length Steel tested at Hagan to suit.

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

Evaporator coils tested to 400 lb. and today to 50 lb.

Contact Rod tested to 50 lb.

The Machinery and Boilers of this Steamer have been constructed under Special Survey, and placed on board in accordance with the Society's Rules. They are now in my opinion in safe working condition, and the Case is respectfully submitted for the ratification of L.M.C. 11-12 in the Register Book.

It is submitted that
this vessel is eligible for
THE RECORD + L.M.C. 11. 12

F.D.

| | | |
|------------------------------|----------|-------------------|
| The amount of Entry Fee | £ 3 : 0 | When applied for, |
| Special | £ 51 : 3 | 22. 11. 12 |
| Donkey Boiler Fee | £ | When received, |
| Travelling Expenses (if any) | £ | 27-11-12 |

Committee's Minute

Assigned

TUE NOV 26 1912

L.M.C. 11. 12

James Limer.
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



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Lloyd's Register
Foundation

West Hartlepool

Certificate (if required) to be sent to
(The Surveyors are requested not to write on or below the space for Committee's Minute.)