

Rpt. 4.

REPORT ON MACHINERY.

No. 24374

No. in Survey held at

Glasgow

Reg. Book.

on the

S.S. "Arrango"

Port of Glasgow

Date, first Survey 11 Oct 05

Received at London Office

TUES. 4 SEP 1906

(Number of Visits)

Last Survey 14 Aug 1906

Master

Built at

Glasgow

By whom built

D.W. Henderson & Co. Ltd.

Gross Tons

Net

When built 1906

Engines made at

Glasgow

By whom made

D.W. Henderson & Co. Ltd.

when made 1906

Boilers made at

Glasgow

By whom made

D.W. Henderson & Co. Ltd.

when made 1906

Registered Horse Power

485

Owners Central Steam Shipping Co.

Port belonging to London

Nom. Horse Power as per Section 28

485

Is Refrigerating Machinery fitted for cargo purposes

No

Is Electric Light fitted

Yes

ENGINES, &c.—Description of Engines

Triple compound

No. of Cylinders 3

No. of Cranks 3

Dia. of Cylinders

26" 44" 73"

Length of Stroke

48"

Revs. per minute

70

Dia. of Screw shaft

as per rule 14.9

Material of

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

If the liner is in more than one length are the joints burned

Length

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

Yes

Dia. of Tunnel shaft

as per rule 13.5

as fitted 14.70

Dia. of Crank shaft journals

as per rule 14.2

as fitted 14.34

Dia. of Crank pin

15"

Size of Crank webs

19" 9"

collars

14 3/4

Dia. of screw

8-0"

Pitch of Screw

17 9"

No. of Blades

4

State whether moveable

Yes

No. of Feed pumps

2

Diameter of ditto

4 1/4"

Stroke

27"

Can one be overhauled while the other is at work

Yes

No. of Bilge pumps

2

Diameter of ditto

4 1/4"

Stroke

27"

Can one be overhauled while the other is at work

Yes

No. of Donkey Engines

4

Sizes of Pumps

(1) 10 1/2 x 8 x 18 (2) 9 x 11 x 10 (3) 5 x 3 1/2 x 6"

No. and size of Suctions connected

to both Bilge and Donkey pumps

In Engine Room

Two 3 1/2"

In Holds, &c.

Forward

2 in each hold

3 1/2"

No. of Bilge Injections

1

sizes

7 1/2"

Connected to condenser, or to circulating pump

pump

Is a separate Donkey Suction fitted in Engine room

of size

Yes

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 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

Fuel Bilge Suctions

How are they protected

Wood casing

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

25/6/06

of Stern Tube

25/6/06

Screw shaft and Propeller

25/6/06

Is the Screw Shaft Tunnel watertight

Apparently

Is it fitted with a watertight door

Yes

worked from

upper platform

BOILERS, &c.—(Letter for record)

Manufacturers of Steel

W. Bealman Steel Co. of Scotland & Lancashire Steel Co.

Total Heating Surface of Boilers

6627 sq ft

Is Forced Draft fitted

Yes

No. and Description of Boilers

3

Single ended cylindrical

Working Pressure

200 lbs

Tested by hydraulic pressure to

400 lbs

Date of test

1/6/06

No. of Certificate

18146

Can each boiler be worked separately

Yes

Area of fire grate in each boiler

57 3/4"

No. and Description of Safety Valves to

each boiler

each boiler 1 in diameter

Area of each valve

11.07

Pressure to which they are adjusted

205 lbs

Are they fitted with easing gear

Yes

Smallest distance between boilers or uptakes and bunkers or woodwork

10"

Mean dia. of boilers

14.9

Length

11.0

Material of shell plates

Steel

Thickness

1 1/2"

Range of tensile strength

29.6-32

Are the shell plates welded or flanged

No

Descrip. of riveting: cir. seams

Cap double

long. seams

Butt

Diameter of rivet holes in long. seams

1 1/2"

Pitch of rivets

10"

Lap of plates or width of butt straps

21 3/4"

Per centages of strength of longitudinal joint

rivets 87.6

plate 85.0

Working pressure of shell by rules

230 lbs

Size of manhole in shell

16 x 12"

Size of compensating ring

32 x 28"

No. and Description of Furnaces in each boiler

3

Deighton

Material

Steel

Outside diameter

3-10 7/16

Length of plain part

top

bottom

Thickness of plates

crown 21"

bottom 32"

Description of longitudinal joint

Welded

No. of strengthening rings

1

Working pressure of furnace by the rules

230 lbs

Combustion chamber plates: Material

Steel

Thickness: Sides

7/8"

Back

7/8"

Top

7/8"

Bottom

7/8"

If stays are fitted with nuts or riveted heads

nuts

Material of stays

Steel

Diameter at smallest part

1.69"

Area supported by each stay

60"

Working pressure by rules

228 lbs

End plates in steam space:

Material

Steel

Material

Steel

Thickness

1 3/32"

Pitch of stays

16 1/2 x 15 1/2"

How are stays secured

27 rivets

Working pressure by rules

235 lbs

Material of stays

Steel

Diameter at smallest part

5.79"

Area supported by each stay

240"

Working pressure by rules

261

Material of Front plates at bottom

Steel

Thickness

1 1/16"

Material of Lower back plate

Steel

Thickness

31/32"

Greatest pitch of stays

13"

Working pressure of plate by rules

267 lbs

Diameter of tubes

2 1/2"

Pitch of tubes

3 1/2 x 3 1/8"

Material of tube plates

Steel

Thickness: Front

1 5/32"

Back

1 3/16"

Mean pitch of stays

8 3/4"

Pitch across wide water spaces

14"

Working pressures by rules

335 & 216 lbs

Girders to Chamber tops: Material

Steel

Depth and

thickness of girder at centre

7 1/2 x 1 1/16"

Length as per rule

36"

Distance apart

7 3/4"

Number and pitch of stays in each

(3) 9 1/2"

Working pressure by rules

218

Superheater or Steam chest; how connected to boiler

none

Can the superheater be shut off and the boiler worked

separately

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

Yes

W 969-0042

VERTICAL DONKEY BOILER—Manufacturers of Steel

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 _____ Stayed by _____

Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:—2 top end bolts & nuts 2 bottom end bolts & nuts
2 main bearing bolts & nuts, 6 coupling bolts & nuts, 1 set each fuel & bilge
pump valves & seats, bolts, nuts & iron mounted, 1 propeller shaft, & 4 blades
1 piece of crank shaft.

The foregoing is a correct description,

DAVID & WILLIAM HENDERSON & CO., LIMITED

A. J. Henderson *Director*

Manufacturer.

Dates of Survey while building { During progress of work in shops— 1905 Oct 11, 1906 Jan 16, 24, Feb 7, 20, 21, Mar 16, 21, Apr 27, May 10, 14, 21, 23, Jun 1, 5, 8, 12, 13
During erection on board vessel— 20, 25, 26, 27, 30, 31, 4, 11, 12, 24, 26, 31, Aug 1, 6, 9, 14
Total No. of visits 24

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

Dates of Examination of principal parts—Cylinders 27/4/06 27/4/06 " 27/4/06 donkey " 27/4/06
Connecting rods 20/2/06 Crank shaft 16/1/06 Thrust shaft 20/2/06 Tunnel shafts 20/2/06 Screw shaft 7/3/06 Propeller 7/3/06
Stern tube 8/6/06 Steam pipes tested 30/6/06, 31/7/06 Engine and boiler seatings 4/7/06 Engines holding down bolts 24/7/07
Completion of pumping arrangements 9/8/06 Boilers fixed 26/7/06 Engines tried under steam 14.8.06
Main boiler safety valves adjusted 20.8 Thickness of adjusting washers Port & Star Bottom 7/16 Centre 3/8
Material of Crank shaft *Steel* Identification Mark on Do. 1249-80 Material of Thrust shaft *Steel* Identification Mark on Do. 1627 A.H.
Material of Tunnel shafts *Steel* Identification Marks on Do. *see reports* Material of Screw shafts *Steel* Identification Marks on Do. Q.M. 7/8/06
Material of Steam Pipes *Lap welded iron* Test pressure 600 lbs.

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

These engines and boilers have been built under special survey the materials and workmanship are of good description, they have been well fitted on board and tried under steam.

In our opinion the machinery of this vessel is eligible to have notification of + L.M.C. 8.06 in the Register Book.

It is submitted that this vessel is eligible for THE RECORD L.M.C. 8.06 F.D. ELEC. LIGHT.

The amount of Entry Fee... £ 3 : :
Special ... £ 44 : :
Donkey Boiler Fee ... £ : :
Travelling Expenses (if any) £ : :
Glasgow 3-SEP-1906

Committee's Minute

Assigned

+ L.M.C. 8.06

Wm. J. Gordon
5.9.06
Wm. J. Gordon
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



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MACHINERY CERTIFICATE
WRITTEN 6/9/06

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