

REPORT ON MACHINERY.

No. 22468
Mills No. 4314

Port of

Sunderland

Received at London Office

FRI. 27 OCT 1905

No. in Survey held at

Sunderland

Date, first Survey

19th April, 1905

Last Survey

9th October 1905

Reg. Book.

Supp. on the Steel Screw Steamer ZAFRA

(Number of Visits)

10

164 October 1905

Master

E. Cox

Built at

Middlesbrough

By whom built

R. Crofts & Sons, Ltd.

When built

1905

Engines made at

Sunderland

By whom made

North Eastern Marine Engineering Co., Ltd.

when made

1905

Boilers made at

Sunderland

By whom made

North Eastern Marine Engineering Co., Ltd.

when made

1905

Registered Horse Power

Owners The English & American Shipping Co. (C) Bowring & Co. (Ingrm)

Port belonging to

London

Nom. Horse Power as per Section 28

344

Is Refrigerating Machinery fitted for cargo purposes

no

Is Electric Light fitted

no

ENGINES, &c.—Description of Engines Inverted, Triple Expansion No. of Cylinders Three No. of Cranks Three

Dia. of Cylinders 25-42-68 Length of Stroke 45 Revs. per minute

Dia. of Screw shaft

as per rule 14.16

Material of screw shaft

Iron

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

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

If two

liners are fitted, is the shaft lapped or protected between the liners

yes

Length of stern bush

4-11

Dia. of Tunnel shaft

as per rule 12.47

Dia. of Crank shaft journals

as per rule 13.09

Dia. of Crank pin

13 1/4

Size of Crank webs

8 3/4 x 9 3/4

Dia. of thrust shaft under

collars

13 1/4

Dia. of screw

14-6

Pitch of screw

14-0

No. of blades

four

State whether moveable

no

Total surface

96 sq. ft.

No. of Feed pumps

Two

Diameter of ditto

3 1/2

Stroke

24

Can one be overhauled while the other is at work

yes

No. of Bilge pumps

Two

Diameter of ditto

4

Stroke

24

Can one be overhauled while the other is at work

yes

No. of Donkey Engines

Two

SIZES OF PUMPS

7 x 9 x 9 1/2

6 x 4 x 6

No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room

Three 3 1/2" rings

In Holds, &c. Two 3 1/2" rings in each hold.

No. of bilge injections

one

size

5

Connected to condenser, or to circulating pump

pump

Is a separate donkey suction fitted in Engine room & 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

none

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

forward hold bilges

How are they protected

iron 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

When were stern tube, propeller, screw shaft, and all connections examined in dry dock

new vessel

Is the screw shaft tunnel watertight

yes

Is it fitted with a watertight door

yes

worked from

Top platform

BOILERS, &c.—

(Letter for record

T)

Total Heating Surface of Boilers

5400 sq. ft.

Is forced draft fitted

no

No. and Description of Boilers

Two single ended Cylindrical

Working Pressure

180 lb.

Tested by hydraulic pressure to

360 lb.

Date of test

9/9/05

Can each boiler be worked separately

yes

Area of fire grate in each boiler

43 3/4 sq. ft.

each boiler

Two, direct spring

Area of each valve

8.29 sq. ft.

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

13 1/2

Mean dia. of boilers

16-6 1/4

Length

11-0

Material of shell plates

steel

Thickness

1 1/2

Range of tensile strength

29,520

Are they welded or flanged

no

Descrip. of riveting: cir. seams

Lap 5R. long. seams

5R. 7R.

Diameter of rivet holes in long. seams

1 3/8

Pitch of rivets

9 7/8

Lap of plates or width of butt straps

1-8 3/8

Per centages of strength of longitudinal joint

rivets 84.29

plate 86.04

Working pressure of shell by rules

180.9 lb.

Size of manhole in shell

end 16 x 12

Size of compensating ring

flanged

No. and Description of Furnaces in each boiler

four, Brighton

Material

steel

Outside diameter

43 1/2

Length of plain part

top

bottom

Thickness of plates

crown 1 1/4

bottom 3/2

Description of longitudinal joint

weld

No. of strengthening rings

—

Working pressure of furnace by the rules

188 lb.

Combustion chamber plates: Material

steel

Thickness: Sides

3/4

Back

3/4

Top

3/4

Bottom

7/8

Pitch of stays to ditto: Sides

11 2/8 x 9

Back

11 1/2 x 9 1/8

Top

9 x 9 1/4

If stays are fitted with nuts or riveted heads

nuts

Working pressure by rules

180.4 lb.

Material of stays

iron

Diameter at smallest part

1.89

Area supported by each stay

104.9

Working pressure by rules

199 lb.

End plates in steam space:

Material

steel

Thickness

1 1/2

Pitch of stays

24 3/4 x 22 3/4

How are stays secured

5R + 11

Working pressure by rules

180.8 lb.

Material of stays

steel

Diameter at smallest part

3.26

Area supported by each stay

563.0

Working pressure by rules

199 lb.

Material of Front plates at bottom

steel

Thickness

7/8

Material of Lower back plate

steel

Thickness

29

Greatest pitch of stays

14 1/2 x 10 1/4

Working pressure of plate by rules

180 lb.

Diameter of tubes

3 1/4

Pitch of tubes

4 5/8 x 4 1/2

Material of tube plates

steel

Thickness: Front

7/8

Back

13/16

Mean pitch of stays

9 1/4 x 9

Pitch across wide water spaces

14 1/2

Working pressures by rules

215.7 lb.

Girders to Chamber tops: Material

steel

Depth and

thickness of girder at centre

4 3/4 x 1 7/8

Length as per rule

29.9

Working pressure by rules

183 lb.

Superheater or Steam chest; how connected to boiler

—

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

—</

DONKEY BOILER— No. _____ Description *See accompanying report on form Rpt 5.*

Made at _____ By whom made _____ When made _____ Where fixed _____

Working pressure _____ tested by hydraulic pressure to _____ No. of Certificate _____ Fire grate area _____ Description of safety valves _____

No. of safety valves _____ Area of each _____ Pressure to which they are adjusted _____ 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 _____ 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 _____ Thickness of furnace crown plates _____ Stayed by _____ Working pressure of shell by rules _____

Working pressure of furnace by rules _____ Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____

SPARE GEAR. State the articles supplied:— *Two each top end, bottom end & main bearing bolts & nuts, one set of coupling bolts & nuts, one set each feed & bilge pump valves, one propeller & propeller shaft, assorted iron etc.*

The foregoing is a correct description,
NORTH EASTERN MARINE ENGINEERING CO LTD
Walden Heath, Surrey Manufacturer.

Dates of Survey while building { During progress of work in shops - - } 25:— *April 19, May 2, 5, 8, 11, 15, 22, 30, June 5, 15, 19, 21, 22, 23, 27, July 3, 10, 14, 18, 24, 25*
 { During erection on board vessel - - } 26, 28, *Aug 1, 4, 10, 11, 15, 17, 23, 28, 30, 31, Sept. 7, 9, 29, Oct 2, 3, 4, 9, (Mdb) Aug 5, 15, Oct 9, 1905*
 Total No. of visits *40 (Mdb) 7* Is the approved plan of main boiler forwarded herewith *Yes.*

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

The Machinery of this Vessel has been built under special survey, the material & workmanship sound and good, the Boilers & steam pipes have been tested by hydraulic pressure in accordance with the Rules & the machinery worked well & the safety valves have been adjusted under steam to their working pressure & easing gear fitted.

*This Vessel is eligible in our opinion to have the Notation *LMC 10.05 in the Register Book.*

It is submitted that
 this vessel is eligible for
 THE RECORD *LMC 10.05.*

Im *Imd.*
27.10.05.

The amount of Entry Fee... £ *3* : : When applied for, *14.10.1905*
 Special ... £ *37* : *4* : :
 Donkey Boiler Fee ... £ : : :
 Travelling Expenses (if any) £ : : : *23/10/05*

W. H. D. & W. R. Coomber R.D. Philston
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute

1005. 31 OCT 1905

Assigned

+ LMB 1003

MACHINERY CERTIFICATE
 WRITTEN.



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 Foundation