

REPORT ON MACHINERY.

No. 490

(Received in London Office 1/6/80)

No. in Survey held at Sunderland
Reg. Book.

Date, first Survey Oct. 18th /79 Last Survey May 20th 1880

347 on the Screw Steamer "Norseman"

Tons X

Master W. H. Pacey Built at London When built 1865

Engines made at Sunderland By whom made W. G. Clark when made May 1880

Boilers made at Do By whom made Do when made Do

Registered Horse Power 160 Owners Western & Brazilian Tel. Coy. Ltd Port belonging to London

ENGINES, &c.—

Description of Engines Inverted Compound surface Condensing

Diameter of Cylinders 33" & 62" Length of Stroke 42 No. of Rev. per minute 56 Point of Cut off, High Pressure 2/3 stroke Low Pressure 2/3 stroke

Diameter of Screw shaft 11 1/2" Diameter of Tunnel shaft 10 1/2" Diameter of Crank shaft journals 11 1/2" Diameter of Crank pin 11 1/2" size of Crank webs 15" x 7 1/2"

Diameter of screw 14.3" Pitch of screw 18.0" No. of blades 4 state whether moveable not total surface 53 sq. feet

No. of Feed pumps 2 diameter of ditto 4 1/4" Stroke 21 Can one be overhauled while the other is at work no

No. of Bilge pumps 2 diameter of ditto 4 1/4" Stroke 21 Can one be overhauled while the other is at work yes

Where do they pump from Both pumps draw from the sea. Cable tanks, & Bilges of engine room, fore & aft holds.

No. of Donkey Engines Two Size of Pumps 8" x 10" stroke Where do they pump from The large one from sea cable tanks, and bilges of engine room, fore and aft holds & Condensers. Small one from same places & hotwell.

Are all the bilge suction pipes fitted with roses yes Are the roses always accessible yes Are the sluices on Engine room bulkheads always accessible yes

No. of bilge injections one and sizes 4" Are they connected to condenser, or to circulating pump to circulating pump

How are the pumps worked By levers attached to piston rod crosshead of after engine.

Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks Slip valves & Cocks.

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 Toward Bilge & Cable tank pipe. How are they protected by wooden casings

Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times yes.

Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges yes.

When were stern tube, propeller, screw shaft, and all connections examined in dry dock March 30th 1880

Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from top platform of engine room

BOILERS, &c.—

Number of Boilers Two Description Cylindrical & Multitubular

Working Pressure 80 lbs Tested by hydraulic pressure to 160 lbs Date of test 6.3.79

Description of ~~superheating apparatus~~ or steam chest Horizontal dome

Can each boiler be worked separately yes Can the superheater be shut off and the boiler worked separately no superheater

No. of square feet of fire grate surface in each boiler 45 Description of safety valves Spring valves by G. Clark

No. to each boiler Two area of each valve 12.5 Are they fitted with casing gear yes

No. of safety valves to superheater — area of each valve — are they fitted with casing gear —

Smallest distance between boilers and ~~bunkers~~ woodwork 24 inches

Diameter of boilers 12.10" Length of boilers 10.6 description of riveting of shell long. seams Double riveted lap circum. seams Double riv & lap

Thickness of shell plates 1" diameter of rivet holes 1 3/32" whether punched or drilled drilled pitch of rivets 5 1/2"

Lap of plating 8" per centage of strength of longitudinal joint 68. working pressure of shell by rules 82 lbs

Size of manholes in shell 16" x 13" size of compensating rings 7 5/8" x 1"

No. of Furnaces in each boiler 3 outside diameter 3.1" length, top 7.6" bottom 7.6"

Thickness of plates 1/2" description of joint Lapped & double riv & if rings are fitted none greatest length between rings —

Working pressure of furnace by the rules 80 lbs

Combustion chamber plating, thickness, sides 1/2" back 1/2" top 1/2"

Pitch of stays to ditto sides 7 1/2" x 7 1/2" back 7 1/2" x 7 1/2" top Circular 26 rad & gussets 15 pitch

If stays are fitted with nuts or riveted heads riveted heads working pressure of plating by rules 114 lbs

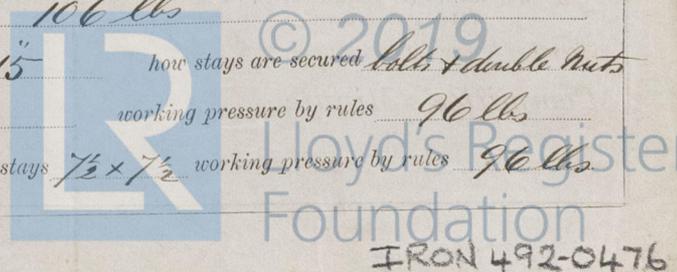
Diameter of stays at smallest part 1 1/8" working pressure of ditto by rules 106 lbs

End plates in steam space, thickness 1/4" & 1/2" plates across pitch of stays to ditto 15 3/4" x 15" how stays are secured bolts & double nuts

Working pressure by rules 100 lbs diameter of stays at smallest part 2 1/4" working pressure by rules 96 lbs

Front plates at bottom, thickness 5/8" Back plates, thickness 5/8" greatest pitch of stays 7 1/2" x 7 1/2" working pressure by rules 96 lbs

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Diameter of tubes $3\frac{3}{4}$ pitch of tubes $5\frac{1}{2} \times 5$ thickness of tube plates, front $\frac{1}{16}$ back $\frac{5}{16}$
 How stayed *stay tubes* pitch of stays $10\frac{1}{2} \times 10$ width of water spaces $12 \cdot 6 \cdot 1\frac{1}{2} \times 1\frac{1}{4}$
 Diameter of Superheater or Steam chest $4 \cdot 0$ length $11 \cdot 6$
 Thickness of plates $\frac{7}{16}$ description of longitudinal joint *double in lap* diameter of rivet holes $\frac{3}{4}$ pitch of rivets $2\frac{1}{2}$
 Working pressure of shell by rules 99 lbs Diameter of flue thickness of plates
 If stiffened with rings distance between rings Working pressure by rules
 End plates of superheater or steam chest; thickness $\frac{7}{16}$ How stayed *no stays, spherical 2 ft radius*
 Superheater or steam chest; how connected to boiler *By an oval neck piece $16 \times 13 \times \frac{3}{4}$*

DONKEY BOILER— Description *Upright, Cylindrical & Multitubular, Cochran's Patent.*
 Made at *Gateshead* By whom made *Clark Chapman & Gurney* when made *May 1880*
 Where fixed *on deck* working pressure 60 lbs Tested by hydraulic pressure to 120 lbs No. of Certificate 246
 Fire grate area $12 \cdot 5$ sq ft Description of safety valves *loaded direct & blow* No. of safety valves *two* area of each 7 sq ins
 If fitted with easing gear *the direct loaded one is fitted* If steam from main boilers can enter the donkey boiler *No.*
 Diameter of donkey boiler $4 \cdot 6$ length $9 \cdot 6$ description of riveting *longitudinal seams double in lap, others single*
 thickness of shell plates $\frac{3}{8}$ diameter of rivet holes $\frac{3}{4}$ whether punched or drilled *punched*
 pitch of rivets 3 length lap of plating $3\frac{3}{4}$ per centage of strength of joint 75
 thickness of crown plates $\frac{1}{2}$ stayed by *4 gusset stay $10 \times \frac{3}{8}$*
 Diameter of furnace, top $3 \cdot 0$ bottom $4 \cdot 0$ length of furnace $1 \cdot 6$
 thickness of plates $\frac{3}{8}$ description of joint *lapped and single riveted.*
 thickness of furnace crown plates $\frac{1}{2}$ stayed by *no stays, spherical 1' 9" radius*
 Working pressure of shell by rules 80 lbs working pressure of furnace by rules 62 lbs.
 diameter of uptake 12 thickness of plates $\frac{7}{16}$ thickness of water tubes *No 10. B.N.G.*

The foregoing is a correct description,
 Made at *Gateshead* Manufacturer. *Except of Donkey Boiler*

General Remarks (State quality of workmanship, opinions as to class, &c.)
The Engines and Boilers have been constructed under ordinary Survey. The Material and Workmanship are good and efficient. All the Machinery has been tried under steam and found very satisfactory. In my opinion the engines and Boilers are in good order and safe working condition, and eligible for the notation of LLOYD'S M.C. in the Register Book.
The old engines, Boilers, Tunnel shafting, stem tube, Sea Cocks & Valves and all other details of the machinery were removed, and New Engines & Boilers with all the details complete were fitted.

This submitted that the amount is correct to have the notation LLOYD'S M.C. 5-80 recorded in the Register Book. JW 3/6/85

The amount of Entry Fee .. £ 3 : 0 : received by me,
 Special Ordinary .. £ 9 : 0 :
 Certificate (if required) .. £ 0 : 5 : 27th May 1880.
 To be sent as per margin.
 (Travelling Expenses, if any, £ $12 \cdot 5$)

William Allison
 Engineer, Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute 18

