

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

344 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 Id. Co. Ltd Port belonging to London

ENGINES, &c.—

Description of Engines Inverted, Compound, surface Condensing
Diameter of Cylinders 33" x 62" Length of Stroke 42 No. of Rev. per minute 56 Point of Cut off, High Pressure 5 stroke Low Pressure 5 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 1/4"
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 & holdwell.
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 easing gear yes
No. of safety valves to superheater — area of each valve — are they fitted with easing 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 1/8"
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 1/16" & 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 $5\frac{1}{4} \times 5$ " thickness of tube plates, front $\frac{1}{16}$ " back $\frac{5}{8}$ "
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 $16 \times 13 \times 3\frac{1}{4}$ "*

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 $\frac{1}{2}$ " 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,
Wm. Allison 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.*

*It is submitted that this
should be signed to have
the notation LLOYD'S
M.C. 5.80 recorded in the
Register Book
Wm 3/6/85*

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

Committee's Minute 18

William Allison © 2019
Engineer, Surveyor to Lloyd's Register of British & Foreign Shipping.