

REPORT ON MACHINERY.

No. 2743

No. in Survey held at *Glasgow & Belfast*
Reg. Book.

Date, first Survey *June 22nd 1880* Last Survey *March 14 1881*

(Received in London Office. *21/8/81*)

322.56 R
Tons *373.25 G*

on the *Screw Steamer "Ethelbert"*
Master *Walker* Built at *Belfast* When built *1881*
Engines made at *Glasgow* By whom made *Muir & Houston* when made *1881*
Boilers made at *- - -* By whom made *Muir & Houston* when made *1881*
Registered Horse Power *40* Owners *A. C. Colvill* Port belonging to *Glasgow*

ENGINES, &c.—

Description of Engines *C. S. D. A*
Diameter of Cylinders *22" + 40"* Length of Stroke *30"* No. of Rev. per minute *90* Point of Cut off, High Pressure *19"* Low Pressure *16 1/2"*
Diameter of Screw shaft *4 1/2"* Diameter of Tunnel shaft *4"* Diameter of Crank shaft journals *4 1/2"* Diameter of Crank pin *4 1/2"* size of Crank webs *5 1/2"*
Diameter of screw *11 1/2"* Pitch of screw *14 1/2"* No. of blades *Four* state whether moveable *Yes* total surface
No. of Feed pumps *One* diameter of ditto *3 1/2"* Stroke *18"* Can one be overhauled while the other is at work
No. of Bilge pumps *One* diameter of ditto *3 1/2"* Stroke *18"* Can one be overhauled while the other is at work
Where do they pump from *The holds & Engine room*
No. of Donkey Engines *One* Size of Pumps *6 1/2" Cyl. 4" x 8"* Where do they pump from *The Sea, Bilge, Hotwell & Ballast Tank*

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 *2 1/4"* Are they connected to condenser, or to circulating pump *To Circulating*
How are the pumps worked *By Levers*
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 *None* How are they protected
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 *On Ship before being launched*
Is the screw shaft tunnel watertight *Yes* and fitted with a sluice door *Yes* worked from *Upper platform*

BOILERS, &c.—

Number of Boilers *One* Description *Round Horizontal*
Working Pressure *80 lbs* Tested by hydraulic pressure to *160* Date of test *21.2.81*
Description of superheating apparatus or steam chest *Round longitudinal Receiver*
Can each boiler be worked separately *—* Can the ~~superheater~~ *Receiver* be shut off and the boiler worked separately *no*
No. of square feet of fire grate surface in each boiler *52 ft²* Description of safety valves *Direct Spring*
No. to each boiler *Two* area of each valve *14.18"* 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 *6"*
Diameter of boilers *12 ft* Length of boilers *10 ft* description of riveting of shell long. seams *Double riveted* circum. seams *Double riveted*
Thickness of shell plates *29 1/2"* diameter of rivet holes *1 1/4"* whether punched or drilled *Drilled* pitch of rivets *5 1/4"*
Pitch of plating *8"* per centage of strength of longitudinal joint *44.2* working pressure of shell by rules *79.2*
Size of manholes in shell *16 1/2" x 11 1/2"* size of compensating rings *5 1/2" x 7 1/2"*
No. of Furnaces in each boiler *Three* outside diameter *22.11"* length, top *6.6"* bottom *9 ft 1/4"*
Thickness of plates *15 1/2" + 7 1/2" bottom* description of joint *double straps* if rings are fitted *Half riveted* greatest length between rings *—*
Working pressure of furnace by the rules *83 lbs*
Combustion chamber plating, thickness, sides *7/16"* back *7/16"* top *7/16"*
Pitch of stays to ditto sides *8" x 7 1/2"* back *8" x 8"* top *9" x 8 1/2" (stud 1 1/2")*
Stays are fitted with nuts or riveted heads *Nuts* working pressure of plating by rules *91 lbs*
Diameter of stays at smallest part *1 1/2" + 1 1/2"* working pressure of ditto by rules *106 lbs*
Plating in steam space, thickness *12/16"* pitch of stays to ditto *15" x 15"* how stays are secured *By double nuts*
Working pressure by rules *89 lbs* diameter of stays at smallest part *2 5/8"* working pressure by rules *93 lbs*
Bottom plates at bottom, thickness *9/16"* Back plates, thickness *9/16"* greatest pitch of stays *12" x 8"* working pressure by rules *Lloyd's Register*

Diameter of tubes $3\frac{1}{2}$ " pitch of tubes $4\frac{3}{4}$ " thickness of tube plates, front $\frac{1}{16}$ " back $\frac{1}{16}$ "
How stayed *by tubes* pitch of stays $9\frac{1}{2} \times 9\frac{1}{2}$ " width of water spaces 5"
Diameter of ~~superheater~~ Steam chest 2'6" length 6'6"
Thickness of plates $\frac{6}{16}$ " description of longitudinal joint $\frac{1}{16}$ " diameter of rivet holes $\frac{13}{16}$ " pitch of rivets $3\frac{1}{2}$ "
Working pressure of shell by rules — Diameter of flue — thickness of plates —
If stiffened with rings — distance between rings — Working pressure by rules —
End plates of ~~superheater~~ steam chest; thickness $\frac{1}{16}$ " How stayed *by one bar stay 2 1/8" dia*
~~Superheater~~ or steam chest; how connected to boiler *by one neck 12" dia x 1/16" thick*

DONKEY BOILER—

Description *Round vertical*
Made at *Glasgow* By whom made *Muir & Houston* when made 1881
Where fixed *in stockhold* working pressure 60 lbs Tested by hydraulic pressure to 120 lbs No. of Certificate 477
Fire grate area $10\frac{1}{2}$ Description of safety valves *Direct Spring* No. of safety valves *One* area of each $\frac{1}{4}$ in²
If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No*
Diameter of donkey boiler $4\frac{1}{2}$ " length $9\frac{1}{2}$ " description of riveting *Double & Single*
thickness of shell plates $\frac{6}{16}$ " diameter of rivet holes $\frac{13}{16}$ " whether punched or drilled *punched*
pitch of rivets $3\frac{1}{2}$ " lap of plating 4" per centage of strength of joint 70%
thickness of crown plates $\frac{1}{16}$ " stayed by *Uptake & palm stays*
Diameter of furnace, top $3\frac{1}{2}$ " bottom $3\frac{1}{2}$ " length of furnace $4\frac{1}{2}$ "
thickness of plates $\frac{1}{16}$ " description of joint *Lap*
thickness of furnace crown plates $\frac{1}{16}$ " stayed by *Uptake*
Working pressure of shell by rules 80 lbs working pressure of furnace by rules *Stayed by two cross tubes*
diameter of uptake 10" thickness of plates $\frac{6}{16}$ " thickness of water tubes $\frac{9}{16} \times 1\frac{1}{2}$ dia

The foregoing is a correct description,
Muir & Houston Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c. *The Engines & Boilers are of good workmanship and now in good order & safe working condition and eligible in my opinion to be noted in the Register Book*
Lloyd's M.C. 3.81

It is submitted that this result is desirable to be recorded in the Register Book
M 11/3/81

The amount of Entry Fee .. £ 2 : " : " received by me,
Muir & Houston .. £ 10 : 10 : " Paid in Glasgow
Certificate (if required) .. £ " : " : " March 1881
To be sent as per margin.
(Travelling Expenses, if any, £ 3 : 3 : 0)

Committee's Minute

Tuesday March, 22nd. 1881.

Lloyd's

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

Clyde District

Lloyd's Register
Foundation