

REPORT ON MACHINERY.

No. 4862

Port of Belfast

No. in Survey held at Belfast
Reg. Book.

Date, first Survey October 4th 1893 Last Survey March 30 1894
(Number of Visits 35)

Received at London Office
MON. 9 APR 1894

on the Steel Screw Steamer "Sultan"

Master Francis Pitts Built at Belfast By whom built Messrs Workman Clark & Co. Ltd Tons { Gross 2090
Net 1288.5

Engines made at Belfast By whom made Messrs Workman Clark & Co. Ltd when made 1894

Boilers made at Belfast By whom made Messrs Workman Clark & Co. Ltd when made 1894

Registered Horse Power 210 Owners West Australian Steam. Nav. Co Port belonging to Liverpool

Nom. Horse Power as per Section 28 206

ENGINES, &c.— Description of Engines Triple Expansion No. of Cylinders Three
Diameter of Cylinders 19:32:52 Length of Stroke 40" Revolutions per minute 80 Diameter of Screw shaft as per rule 9.6.3
Diameter of Tunnel shaft as per rule 9.1.5 Diameter of Crank shaft journals 10 1/2" Diameter of Crank pin 10 1/2" Size of Crank webs 7 1/4 x 19 1/4
Diameter of screw 12 1/4" Pitch of screw 16 1/2" No. of blades 4 State whether moveable no Total surface 46 1/2
No. of Feed pumps one Diameter of ditto 4 1/2" Stroke 21" Can one be overhauled while the other is at work ✓
No. of Bilge pumps two Diameter of ditto 4" Stroke 21" Can one be overhauled while the other is at work yes
No. of Donkey Engines four Sizes of Pumps Weir duplex feed 8" x 6" x 15" 2 in
In Engine Room one 3 1/2" & two 3" dia. { Ballast pump 7" x 9" x 9" duplex and size of Suctions connected to both Bilge and Donkey pumps
No 3 (aft) hold well, one 3" Tunnel well suction 3" { Donkey eng. room donkey 5" x 4 1/2" x 6" 2 in
No 1 hold, two 3" No 2 hold, two 3" { Holds, &c.
No. of bilge injections 1 sizes 4 1/2" Connected to condenser, or to circulating pump no Is a separate donkey suction fitted in Engine room & size yes 6"
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 all connections with the sea direct on the skin of the ship on to trunk, see Eng. Room Are they Valves or Cocks 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 trunk, yes Are the blow off cocks fitted with a spigot and brass covering plate yes
What pipes are carried through the bunkers forward bilge suction How are they protected strong 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
When were stern tube, propeller, screw shaft, and all connections examined in dry dock 30/3/94 Is the screw shaft tunnel watertight wood top
Is it fitted with a watertight door no worked from no entrance to tunnel from Eng. Room as approved

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 3612 1/2
No. and Description of Boilers One double-ended Working Pressure 160 Tested by hydraulic pressure to 320
Date of test 27/1/94 Can each boiler be worked separately ✓ Area of fire grate in each boiler 107.4 1/2 No. and Description of safety valves to each boiler Two. Adams patent Area of each valve 12.56 1/2 Pressure to which they are adjusted Are they fitted
With easing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 1' 8" Mean diameter of boilers 16' 8 3/4
Length 12' 0" Material of shell plates steel Thickness 1 23/64 Description of riveting: circum. seams ends double, long. seams double butt
Diameter of rivet holes in long. seams 1 7/16 Pitch of rivets 9 23/32 Lap of plates or width of butt straps 1' 8 1/2" (x 7/8 & 1 1/2")
Percentage of strength of longitudinal joint 90.6 Working pressure of shell by rules 167 26 Size of manhole in shell 16" x 12"
Size of compensating ring 27 1/2" x 23 1/2" x 1 1/4" No. and Description of Furnaces in each boiler 6 Morrison Material steel Outside diameter 47 3/4
Length of plain part top ✓ bottom ✓ Thickness of plates crown 17/32 bottom 17/32 Description of longitudinal joint welded No. of strengthening rings ✓
Working pressure of furnace by the rules 171 Combustion chamber plates: Material steel Thickness: Sides 9/16 Back ✓ Top 9/16 Bottom 3/4"
Pitch of stays to ditto: Sides 7 3/4 x 7 13/16 Back ✓ Top 6 7/8 x 7 13/16 If stays are fitted with nuts or riveted heads nuts inside Working pressure by rules 179
Material of stays steel Diameter at smallest part 1 1/4" Area supported by each stay 61 Working pressure by rules 160 End plates in steam space: Material steel Thickness 1" Pitch of stays 15" x 17" How are stays secured double nuts & washers Working pressure by rules 163 Material of stays steel
Diameter at smallest part 2 3/8" Area supported by each stay 255 1/2 Working pressure by rules 161 Material of Front plates at bottom steel
Thickness 13/16 Material of Lower back plate ✓ Thickness ✓ Greatest pitch of stays as approved Working pressure of plate by rules 160
Diameter of tubes 2 7/8" Pitch of tubes 4" Material of tube plates steel Thickness: Front 7/8" Back 3/4" Mean pitch of stays 8"
Pitch across wide water spaces 14 7/8 Working pressures by rules 160 Girders to Chamber tops: Material steel Depth and thickness of girder at centre 8 3/4 x 1 1/2 Length as per rule 34 1/2 Distance apart 6 3/4" Number and pitch of Stays in each three at 7 1/2"
Working pressure by rules 182 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 ✓
Pitch of rivets ✓ Working pressure of shell by rules ✓ Diameter of flue ✓ Material of flue plates ✓ Thickness ✓
Stays ✓ 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 ✓

BEL63-0050

DONKEY BOILER— Description *Horizontal two-flue. Multitubular*
 Made at *Belfast* By whom made *Workman Clark & Co. Ltd.* When made *1894* Where fixed *on deck*
 Working pressure *160* tested by hydraulic pressure to *320* No. of Certificate *183* Fire grate area *29* Description of safety valves *Adam's patent*
 No. of safety valves *2* Area of each *3.98* Pressure to which they are adjusted *160* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Diameter of donkey boiler *9' 6"* Length *8' 0"* Material of shell plates *steel* Thickness *1 3/16*
 Description of riveting long. seams *Double straps. Treble riv.* Diameter of rivet holes *1 5/16* Whether punched or drilled *drilled* Pitch of rivets *5 13/16*
 Butt straps *14 1/16" x 5/8"* Per centage of strength of joint *87* Rivets *84* Thickness of shell plates *1 3/16* end *7/8 x 3/4 front* Radius of do. *5/8 x 5/8 back* No. of Stays to do. *10*
 Dia. of stays. *2 1/2"* Diameter of furnace *Top 36" Bottom 36"* Length of furnace *5' 3"* Thickness of furnace plates *2 1/32* Description of joint *double straps* Thickness of *comb. cham.* plates *1 7/32* Stayed by *1 3/8* stays *7/4* pitch Working pressure of shell by rules *162*
 Working pressure of furnace by rules *170* Diameter of *tubes* *2 7/8* Thickness of *tube* plates *fr. 7/8 to 1 1/16* Thickness of water tubes *1/16*
 Steam dome *2' 6" dia. 1/2" plate. Flanged neck connection with boiler.*
 SPARE GEAR. State the articles supplied:— *One third crank shaft. 14 coupling bolts. Two-bladed propeller. Sait end shaft complete. Thrust shaft. Pair connecting rod braces. Air pump bucket & rod. Circulating pump bucket & rod. Air pump head valve seat & guard. Circulating pump ditto. Set fibre valves for each pump. Set main & donkey feed cheeks. 24 boiler tubes. 2 main bearing bolts & nuts. 2 connecting rod top end, & two bottom end, bolts & nuts. Set feed pump valves & seats. Set oil pump valves & seats. 50 condenser tubes. Spare spring for each side escape valve. 2 main safety valve springs. 2 donkey s. v. springs. Assorted bolts, nuts, iron, etc.*

The foregoing is a correct description,

WORKMAN, CLARK & CO., LIMITED, Manufacturers

General Remarks (State quality of workmanship, opinions as to class, &c. *These engines & boilers have been constructed under special survey. The boilers are built in accordance with the approved drawings & together with the main steam pipes have been tested to double the working pressure.*

The discharge valves instead of being fitted on the ship's skin are connected to a vertical rectangular trunk in the engine room, which rises from the bottom plating of the vessel when it is in open communication with the sea. This arrangement is shown on the Engine Room pumping plan. The ashes are also to be discharged into the trunk.

An electric installation is fitted by Messrs W. H. Allen & particulars will be forwarded on the usual form.

The vessel left this port for Glasgow without the safety valves having been seen blowing off under steam. The Glasgow Surveyors have been advised of this & requested to see that the valves of both main & donkey boilers are correctly adjusted.

The machinery in my opinion renders the vessel eligible for the notification + LMC 4.94 when the safety valves of main & donkey boilers are reported to be correctly adjusted.

Photo prints of the main & donkey boilers & of the engine room pumping arrangements, also a tracing of the pumping arrangements in the holds are forwarded with this report.

MACHINERY CERTIFICATE
WRITTEN.

Certificate (if required) to be sent to *this office*

The amount of Entry Fee..	£	3	:	0	:	0	When applied for,
Special	£	30	:	6	:	0	4/4/1894
Donkey Boiler Fee .. .	£	:	:	:	:	:	When received,
Travelling Expenses (if any) £	:	:	:	:	:	:	14/4/1894

A. L. Jones

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

Committee's Minute

Assigned

FRI 13 APR 1894

+ LMC 4.94



© 2019

Lloyd's Register
Foundation