

REPORT ON MACHINERY.

No. 3254

Port of *Falmouth*

Received at London Office

15 FEB 1890

No. in Survey held at *Hayle*

Date, first Survey *10th May 1889*

Last Survey *4th Feb 1890*

Reg. Book.

Q.S. on the *S.S.S. "TONGSHAN" (Harvey 44)*

(Number of Visits *20*)

Tons

Master *Blackburn*

Built at *Hayle*

By whom built *Harvey & Co.*

When built *1890-2*

Engines made at *Hayle*

By whom made *Harvey & Co.*

when made *1890*

Boilers made at *Liverpool*

By whom made *D. Rollo & Sons*

Donkey boiler at *Hayle*

when made *1889-90*

Registered Horse Power *156*

Owners *J. W. Richardson*

Port belonging to *London*

ENGINES, &c.—

Description of Engines *Tri Compound Inverted Surface Condensing*

Diameter of Cylinders *2 1/2", 3 1/2", 5 1/2"* Length of Stroke *39"* No. of Rev. per minute *65* Point of Cut off, High Pressure *7/8"* Low Pressure *6/75"*

Diameter of Screw shaft *10 1/2"* Diam. of Tunnel shaft *10"* Diam. of Crank shaft journals *10 1/2"* Diam. of Crank pin *10 1/4"* size of Crank webs *7 1/4"*

Diameter of screw *14'-0"* Pitch of screw *16'-0"* No. of blades *4* state whether moveable *No* total surface *65 sq. feet*

No. of Feed pumps *2* diameter of ditto *3"* Stroke *20"* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *2* diameter of ditto *3 3/4"* Stroke *20"* Can one be overhauled while the other is at work *Yes*

Where do they pump from *From all compartments*

No. of Donkey Engines *Three* Size of Pumps *(1) 2 diam 3 1/2" 6 stroke (2) 2 diam 6" 10 stroke* Where do they pump from *Bottom, Sea, Bilge, Eng. Room, Ballast Tanks*

No. 3 Pump *fixed in Donkey boiler room on deck 2 1/2" diam 5' stroke from sea*

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 *6"* Are they connected to condenser, or to circulating pump, *Circulating Pump*

How are the pumps worked *By lever attached to Engine crosshead*

Are all connections with the sea direct on the skin of the ship *Yes excepting* Are they Valves or Cocks *Valves and 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 *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 *19 Nov. & 5 Dec. 1889*

Is the screw shaft tunnel watertight *Yes* and fitted with a sluice door *Yes* worked from *Top Eng R Platform*

OILERS, &c.— *Made at Liverpool report attached No. 34814 Liverpool*

Number of Boilers *Two* Description *Cylindrical Multitubular* Whether Steel or Iron *Steel*

Working Pressure *160* Tested by hydraulic pressure to *320 lbs* Date of test *18-9-89*

Description of superheating apparatus or steam chest *None fitted* Heating Surface per rule. *1630 sq ft*

Can each boiler be worked separately *Yes* Can the superheater be shut off and the boiler worked separately *—*

No. of square feet of fire grate surface in each boiler *54* Description of safety valves *Harvey's Lapped Spring* No. to each boiler *Two*

Area of each valve *15.4 sq in* 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 or woodwork *6"* Diameter of boilers *15'-6"*

Length of boilers *10'-0"* description of riveting of shell long. seams *S. Butt straps* circum. seams *Lap & Riv* Thickness of shell plates *1 3/16"*

Diameter of rivet holes *1 1/4"* whether punched or drilled *Drilled* pitch of rivets *3 1/2" & 4 1/4"* Lap of plating *13 3/8" straps*

Percentage of strength of longitudinal joint *85.3* working pressure of shell by rules *161 lbs* size of manholes in shell *16" x 12"*

Size of compensating rings *6 1/2" x 1 3/8"* No. of Furnaces in each boiler *Three*

Outside diameter *3'-2 1/2"* length, top *6'-0"* bottom *6'-0"* thickness of plates *5/8"* description of joint *Welded Ribs* if rings are fitted *No*

Greatest length between rings *—* working pressure of furnace by the rules *199* combustion chamber plating, thickness, sides *5/8"* back *5/8"* top *5/8"*

Each of stays to ditto, sides *8 7/8" x 8 7/8"* back *8 7/8"* top *8 7/8"* If stays are fitted with nuts or riveted heads *Nuts* working pressure of plating by rules *166*

Diameter of stays at smallest part *1 1/4"* working pressure of ditto by rules *163* end plates in steam space, thickness *7/8"*

Each of stays to ditto *13 7/8" x 13 7/8"* how stays are secured *Nuts & Riv* working pressure by rules *172 lbs* diameter of stays at smallest part *2 1/2"*

Greatest pitch of stays *12" x 8 1/2"* working pressure by rules *163 lbs* Diameter of tubes *3 1/2"* pitch of tubes *4 1/4" x 4 1/4"* thickness of tube plates, front *7/8"* back *7/8"* how stayed *Tubes*

Diameter of Superheater or Steam chest *—* length *—* thickness of plates *—* description of longitudinal joint *—* diam. of rivet holes *—*

Each of rivets *—* 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, or steam chest; thickness *—* how stayed *—*

Superheater or steam chest; how connected to boiler *—*

FAL 135-0093

Made at Dunlop & Bell as per form attached for
DONKEY BOILER— Description Cylindrical

Made at Liverpool by whom made Dunlop Bell & Co when made 4-1-90 where fixed 11 Deck in house Reid
 Working pressure 95 tested by hydraulic pressure to 190 No. of Certificate 888 fire grate area 13.3 description of safety
 valves Harvey spring No. of safety valves 2 area of each 4.908 if fitted with easing gear Yes if steam from main boilers can
 enter the donkey boiler No diameter of donkey boiler 6'-6" length 7'-0" description of riveting Lap joints
 Thickness of shell plates 1/2" diameter of rivet holes 13/16" whether punched or drilled Drilled pitch of rivets 2 9/16" lap of plating 1 1/8"
 per centage of strength of joint 68% thickness of crown plates — stayed by —
 Diameter of furnace, top 2'-8" bottom — length of furnace 7'-0" thickness of plates 1/2" description of joint —
 Thickness of furnace crown plates 1/2" stayed by Cylindrical working pressure of shell by rules 95 lbs
 Working pressure of furnace by rules 100 lbs diameter of uptake — thickness of plates — thickness of water tubes —

SPARE GEAR. State the articles supplied:—

One Propeller.
 One third crank shaft
 One left escape valve & spring & a coil
 One Lee & Trap, one slide rod
 One feed escape & spring
 One set safety valves & springs
 One set main and donkey boiler
 2 connecting rod top end balls & nuts
 2 do do bottom do do
 2 main bearing bolts
 1 set coupling bolts
 1 set feed pump valves
 1 set bilge pump valves
 1 set piston springs each piston
 Iron & assorted bolts, nuts etc

1/2 set Jones bars
 12 boiler tubes
 12 condenser tubes
 200 grommets for do
 12 punch ring bolts
 One set pump main gudgeon
 One set air & air pump valves
 Spare bones for connecting
 rod and the usual
 outfit of Engineer's
 tools etc.

The foregoing is a correct description,

Harvey & Co. Limited Manufacturer.
 per H. H. Harvey, Director.

General Remarks (State quality of workmanship, opinions as to class, &c. The machinery has been made

fitting and built under special survey and has been under my inspection from its commencement to completion and trial. I have every reason to believe the materials used to be of the very best quality. The workmanship is very good throughout. The feed and steam pipes are made of solid drawn copper and when tested in my presence to 400 lbs per sq in showed no appearance of weakness or bad workmanship. Safety valves of main boilers set to relieve at 160 lbs.

lifting freely with 2% accumulation during 20 minutes full firing. Safety valves of donkey boiler set to relieve at 95 lbs. no accumulation. Special fittings to machinery are

Gillmore's feed water heater, Gillmore's evaporator, Hocking's feed water distiller. Shurt's patent balance slide valve to S.P. Engine

At the trial trip 4-1-90 off St. Jov's Bay. smooth water everything worked well and satisfactory during six hours steaming with average revs 85. Steam 160. Vac 27 1/2 I.H.P. 1142. with but slight vibration and entire absence of any heating, being easily worked from ahead to astern at any position. The Auxiliary Engine and machinery all work satisfactory. Everything being built in accordance with the rules and instructions I am of opinion that the machinery is fit for classification in the Society's Register.

I therefore beg to submit for the Committee's approval that a machinery certificate be granted with the notation that the machinery is fit for classification in the Society's Register.

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Attached report on boiler

Charles M. B. Deper
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

Committee's Minute

TUES 11 FEB 1890

Machinery Certificate
 Written

+ LMC 2, 90

Lloyd's Register
 Foundation