

REPORT ON MACHINERY.

3257
15 FEB 1890

No. 3257 Port of Falmouth
 No. in Survey held at Hayle Date, first Survey 10th May 1889 Last Survey 4th Feb 1890
 Reg. Book. S. S. S. TONGSHAN (Harvey 47) (Number of Visits 20)
 Master Blackburn Built at Hayle By whom built Harvey & Co. Tons
 Engines made at Hayle By whom made Harvey & Co. When built 1890-2
 Boilers made at Liverpool By whom made D. Rollo & Sons Donkey boiler at Hayle & Bell when made 1889-90
 Registered Horse Power 156 Owners J. W. Richardson Port belonging to London
 Per Rules for fees 206.5

ENGINES, &c.—

Description of Engines Tri Compound Inverted Surface Condensing
 Diameter of Cylinders 21 1/2, 33, 53 Length of Stroke 39 No. of Rev. per minute 65 Point of Cut off, High Pressure 6.75 ^{m.p. 6.25} 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 3/4 size of Crank webs 1 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, Scum, 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 screw 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. 34817 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 15.9 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 D. Butt straps circum. seams Lap & riv Thickness of shell plates 1 3/16
 Diameter of rivet holes 1/4 whether punched or drilled Drilled pitch of rivets 3 1/2 & 4 1/4 Lap of plating 1 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 Rivets 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
 Pitch of stays to ditto, sides 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
 Pitch 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
 Working pressure by rules 171 lbs Front plates at bottom, thickness 3/4 Back plates, thickness 7/8
 Greatest pitch of stays 12 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 pitch of stays 9 1/2 x 9 1/2 width of water spaces 1 1/4
 Diameter of Superheater or Steam chest — length — thickness of plates — description of longitudinal joint — diam. of rivet holes —
 Pitch 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 —

Description of Furnaces
FAL 135-0093

Made at Liverpool & built as per form attached from
DONKEY BOILER— Description *Cylindrical*
 Made at *Liverpool* by whom made *Dunlop Bell & Co* when made *14-1-90* where fixed *U.Sect. in house Pleid*
 Working pressure *95* tested by hydraulic pressure to *190* No. of Certificate *888* fire grate area *13.3 sq ft* description of safety
 valves *Harvey's 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 & coil
One Lee strap, one slide rod
One feed escape & spring
One set safety valves & springs
for main and donkey boilers
 The foregoing is a correct description,
Harvey & Co. Limited Manufacturer.
per H. H. Harvey, Director.

2 connecting rod top end balls & nuts
2 do do bottom do do
2 Main Bearing Bolts
1 set connecting 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 fire bars
12 boiler tubes
12 condenser tubes
200 grommets for do
12 punch and bolts
One set pump main gudgeon
One set air & air pump valves
spare bars for connecting
rod and the usual
output of Engineer's
tools etc.

General Remarks (State quality of workmanship, opinions as to class, &c. *The machinery has been made*
fitted and built under special survey and has been under my inspection
from its commencement to completion and that I have every reason
to believe the materials used to be of the very best quality. The workman-
ship 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 work-
manship. Safety valves of main boilers set to relieve at 160 lbs
lifting freely with 2% accumulation during 20 minutes full
working. Safety valves of donkey boiler set to relieve at 95 lbs
no accumulation. Special fittings to machinery are
Gilman's feed water heater, Gilman's evaporator, Hocking's feed
water distiller. Shurt's patent balance slide valve to S.P. Engine
At the trial trip 14-1-90 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 wa-
rded from ahead to stern 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 Reg-
I therefore beg to submit for the Committee's approval
that a machinery certificate be granted with the independent
of J. + LMC 1-90 in the Register Book 19 from this date
It is submitted that this vessel is eligible
to have + LMC 2-90 recorded W.A. 16, 2-90

The amount of Entry Fee .. £ 2 : 0 : 0 received by me, £ 0 : 0 : 0
 Special .. £ 30 : 6 : 6 paid 4-1-95-6
 Donkey Boiler Fee .. £ : : : credit as Liverpool *
 Certificate (if required) .. £ : 5 : 0 8 1/4 18 95 10-0-0
 (Travelling Expenses, if any, £ 9-4-0)
 Committee's Minute TUES 11 FEB 1890
 Machinery Certificate Written *Home 2, 90*
 Attached report on boiler
 Charles M. B. Deper
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping

RECEIVED FROM SURVEYOR.
 No. 33
 No. 34
 No. in Reg. Book.
 Master
 Engines made
 Boilers made
 Registered
 ENGINES
 Description of
 Diameter of
 Diameter of S
 Diameter of s
 No. of Feed
 No. of Bilge
 Where do they
 No. of Donkey
 Are all the bilge
 No. of bilge in
 How are the p
 Are all connect
 Are they fixed s
 Are they each fi
 What pipes are
 Are all pipes, c
 Are the pipes, c
 When were ster
 Is the screw sha
 BOILERS, c
 Number of Boile
 Working Pressu
 Description of su
 Can each boiler
 No. of square fee
 Area of each val
 Are they fitted wi
 Length of boiler
 Diameter of rivet
 Per centage of stre
 Size of compensat
 Outside diameter
 Greatest length bet
 Pitch of stays to d
 rules 166 lb
 Pitch of stays to di
 smallest part
 Greatest pitch of st
 plates, front
 diameter of Superh
 itch of rivets
 distance between riv

Survey Office

