

REPORT ON MACHINERY.

Port of *Belfast*

MON. DEC 17 1900

Received at London Office

No. in Survey held at *Belfast*
g. Book.

Date, first Survey *Oct 4th 1899* Last Survey *Dec 11th 1900*

(Number of Visits *45*)

on the

S.S. "Indian"

Gross *9121*
Net *5990*

Master

Built at *Belfast*

By whom built *Workman Clark & Co*

Workman Clark & Co

Engines made at *Belfast*

By whom made *Workman Clark & Co*

Workman Clark & Co when made *1900*

Boilers made at

By whom made

when made *1900*

Registered Horse Power

Owners ~~*West India & Pacific S. S. Co*~~

Port belonging to Liverpool
Leopold & Co 1905 Limited

Actual Horse Power as per Section 28 *604*

Is Electric Light fitted *Yes*

ENGINES, &c.—Description of Engines *Low Pressure Simple Expansion* No. of Cylinders *6* No. of Cranks *6*

Diameter of Cylinders *21-35-50* Length of Stroke *48* Revolutions per minute *76* Diameter of Screw shaft *11.97*
as per rule *10.84* as fitted *14.0*

Diameter of Tunnel shaft *13.0* Diameter of Crank shaft journals *13.4* Diameter of Crank pin *13.4* Size of Crank webs *24.5 x 9.5*
as fitted

Diameter of screws *1.5-6* Pitch of screw *18-2* No. of blades *3* State whether moveable *Yes* Total surface *60 sq. ft. in each*

No. of Feed pumps *2* an each engine Diameter of ditto *3.4* Stroke *21* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *2* an each engine Diameter of ditto *4* Stroke *21* Can one be overhauled while the other is at work *Yes*

No. of Donkey Engines *4* Sizes of Pumps *10.5 x 8 x 24* No. and size of Suctions connected to both Bilge and Donkey pumps
10.5 x 8 x 24 *6 x 4 x 10*

Engine Room *Low-3.5* In Holds, &c. *Fore hold 3.5, and three 3 to Tunnel Wells*

No. of bilge injections *2* sizes *7* Connected to condenser, or to circulating pumps *Pumps* a separate donkey suction fitted in Engine room & size *Yes 7.5*

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 *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 *Both*

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 *Fore Hold Suctions* How are they protected *Wood Casings*

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 *Before launching* the screw shaft tunnel watertight *Stated & checked*

Is it fitted with a watertight doors *Yes* worked from *Top platform Engine Room*

BOILERS, &c.— (Letter for record *S*) Total Heating Surface of Boilers *18677 sq. ft.* Is forced draft fitted *No*

No. and Description of Boilers *Two D. Ended & one S. Ended Cyl.* Working Pressure *180 lbs* Tested by hydraulic pressure to *360 lbs*

Date of test *20-9-00* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *126.5 sq. ft.* No. and Description of safety valves to
2 D. Ended - 2 Direct Spring Area of each valve *14.98 sq. in.* Pressure to which they are adjusted *180 lbs* Are they fitted

with easing gear *Yes* Smallest distance between boilers or uptakes and bunkers *28* Mean diameter of boilers *15.9*

Material of shell plates *Steel* Thickness *1.52* Description of riveting: circum. seams *Lap Seams* Butt Seams *Butt Seams*

Diameter of rivet holes in long. seams *1.52* Pitch of rivets *9.4* Lap of plates or width of butt straps *2.14*

Percentages of strength of longitudinal joint *88.2* Working pressure of shell by rules *210 lbs* Size of manhole in shell *16 x 12*

Size of compensating ring *M. Neils* No. and Description of Furnaces in each boiler *3* Material *Steel* Outside diameter *48.5*

Length of plain part *4.5* Thickness of plates *1.52* Description of longitudinal joint *Weld* No. of strengthening rings *2*

Working pressure of furnace by the rules *226 lbs* Combustion chamber plates: Material *Steel* Thickness: Sides *3/8* Back *5/8* Top *3/8* Bottom *3/8*

Pitch of stays to ditto: Sides *8.5 x 1.5* Back *8.5 x 1.5* If stays are fitted with nuts or riveted heads *Nuts inside* Working pressure by rules *204 lbs*

Material of stays *Steel* Diameter at smallest part *1.52* Area supported by each stay *60 sq. in.* Working pressure by rules *221 lbs* End plates in steam space:

Material *Steel* Thickness *1.52* Pitch of stays *20 x 16* How are stays secured *Nuts & Washers* Working pressure by rules *234 lbs* Material of stays *Steel*

Diameter at smallest part *2.14* Area supported by each stay *22 sq. in.* Working pressure by rules *191 lbs* Material of Front plates at bottom *Steel*

Thickness *1* Material of Lower back plate *Steel* Thickness *1.52* Greatest pitch of stays *14.4* Working pressure of plate by rules *268 lbs*

Diameter of tubes *3.4* Pitch of tubes *4.5 x 4.5* Material of tube plate *Steel* Thickness: Front *1.52* Back *1.52* Mean pitch of stays *11.5*

Pitch across wide water spaces *14.4* Working pressures by rules *261 lbs* Distance apart *8.5* Number and pitch of Stays in each *2 x 1.5*

Thickness of girder at centre *8.5 x 1.5* Length as per rule *28.5* Distance apart *8.5* Number and pitch of Stays in each *2 x 1.5*

Working pressure by rules *212 lbs* 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

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



DONKEY BOILER— Description *Cylinder Single Cylind.*
 Made at *Belfast* By whom made *Workman Clark & Co. Ltd.* When made *1900* Where fixed *Main Deck*
 Working pressure *100 lbs* by hydraulic pressure to *200 lbs* No. of Certificate *218* Fire grate area *25 sq ft* Description of safety valves *Direct Spill*
 No. of safety valves *Two* Area of each *4.90 sq ft* Pressure to which they are adjusted *100 lbs* If fitted with easing gear *Yes* If steam from main boilers enter the donkey boiler *No* Diameter of donkey boiler *9'-0"* Length *8'-0"* Material of shell plates *Steel* Thickness *3/8"*
 Description of riveting long seams *Lap Saddle* Diameter of rivet holes *7/8"* Whether punched or drilled *Drilled* Pitch of rivets *4"*
 Lap of plating *6 1/2"* Per centage of strength of joint *85%* Rivets *10-1* Thickness of shell plates *1"* Radius of do. *16 1/2"*
 No. of stays *2 1/2* Diameter of furnace Top *14 1/2"* Bottom *10"* Length of furnace *5'-4"* Thickness of furnace plates *3/8"* Description of joint *Weld* Thickness of *Comb. Chamber* plates *3/8"* Stayed by *Diagonal Stays 14 diam. 9 ft* Working pressure of shell by rules *100*
 Working pressure of furnace by rules *22 1/2 lbs* Diameter of uptake *4"* Thickness of uptake plates *3/8"* Diameter of water tubes *4 1/2"*

SPARE GEAR. State the articles supplied:— *1 Length Crank Shaft: 1 Propeller shaft—complete: 2 Propeller Pins: 1. 14-P. Slide valves & piston valves: 1 Slide valve & spindle for 1. P & L.P. valves: 1 screw pulley & trap complete: air pump bucket, food, and delivery valve seats complete: 1 circulating centrif pump impeller, and bronze spindle: air pump rock: 3 half brasses for crank pins: 2 pumps for 14. P & L.P. pistons, set, and all gear and requirements obtained.*
 The foregoing is a correct description,
 FOR WORKMAN, CLARK & CO., LIMITED Manufacturer.
M. H. Bell

Dates of Survey while building	During progress of work in shops—	1899—Oct 11, 16, 19, 24 Nov 2, 4, 7, 9, 10, 21, 23 Dec 5, 13, 19
	During erection on board vessel—	1900—Jan 9, 14, 22, 26, 29 Feb 12, 15, 23 Mar 1, 13, 25, 26, 31 Apr 4, 12, 23, 24 May 1, 4, 10, 22, 23, 30
	Total No. of visits	Jan 9, 15, 19, 22, 26, 29 July 10, 20, 24, 27 Aug 3 Sep 5, 11, 18, 20, 24, 26, 28 Oct 1, 2, 13, 15, 14, 19, 23, 26, 30 Nov 6, 10, 13, 15, 19, 26, 29 Dec 1, 11 TOTAL 45

General Remarks (State quality of workmanship, opinions as to class, &c.)
ENGINES—Length of stern bush *5'-3"* Diameter of crank shaft journals *11.41"* as per rule *11.41"* Diameter of thrust shaft under collars *13.25"* as fitted *13.25"*
BOILERS—Range of tensile strength *28-32* Are they welded or flanged *No* **DONKEY BOILERS**—No. *1* Range of tensile strength *28-32*
 Is the approved plan of main boiler forwarded herewith *Yes* Is the approved plan of donkey boiler forwarded herewith *Yes*

The machinery of this vessel has been constructed under Special Survey, and is of good material, and workmanship.
 It has been securely fitted on board, and on trial, worked satisfactorily under steam. In my opinion it is eligible to have record **+ L.M.C. 1200** Electric Light

An Electric Light installation by Messrs. Allen & Co., Bedford, has been fitted. A Report will be forwarded later.

It is submitted that this vessel is eligible for THE RECORD. **+ L.M.C. 1200** Elec Light

The amount of Entry Fee..	£ 3 : -	When applied for,	17.12.00
Special	£ 50 : 418.....	17.12.00
Donkey Boiler Fee	£ :	When received,	18.12.00
Travelling Expenses (if any) £	:18.....	

Committee's Minute **TUES. DEC 18 1900**
 Assigned **+ L.M.C. 1200**
 R. J. P. Surveyor
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping
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Certificate (if required) to be sent to
 (The Surveyors are requested to write on or below the space for Committee's Minute.)

MACHINERY CERTIFICATE WRITTEN.