

# REPORT ON MACHINERY.

No. 291

Received at London Office 29<sup>th</sup> Dec 1883

No. in Survey held at Dundee

Date, first Survey 13/1/83

Last Survey 28<sup>th</sup> Nov 1883

Reg. Book.

(Number of Visits) 827.39

on the

S.S. "Inverlay"

Tons 1288.64

Master Craig Built at Dundee By whom built Gourlay Bros. & Co When built 1883  
Engines made at Dundee By whom made Gourlay Bros. & Co when made 1883  
Boilers made at Dundee By whom made Gourlay Bros. & Co when made 1883  
Registered Horse Power 140. Owners Charles Barrie Esq Port belonging to Dundee

## ENGINES, &c.—

Description of Engines Direct Acting Compound Int. Gps Surface Condensing  
Diameter of Cylinders 28" & 54" Length of Stroke 36" No. of Rev. per minute 80 Point of Cut off, High Pressure 7/8" Low Pressure 1/2"  
Diameter of Screw shaft 9 3/4" Diam. of Tunnel shaft 9 1/2" Diam. of Crank shaft journals 9 3/4" Diam. of Crank pin 9 3/4" size of Crank webs 7" x 11 1/4"  
Diameter of screw 13" 6" Pitch of screw 14" 3" No. of blades 4 state whether moveable sd total surface 50 feet  
No. of Feed pumps two diameter of ditto 3 3/4" Stroke 20" Can one be overhauled while the other is at work yes  
No. of Bilge pumps two diameter of ditto 3 1/2" Stroke 20" Can one be overhauled while the other is at work yes  
Where do they pump from all compartments  
No. of Donkey Engines two Size of Pumps 8" x 8" x 4 1/2" Leeds 6" x 7" x 3 1/2" Where do they pump from Sea Tanks & all compartments  
thru ship side (Leeds) from Sea Hotwell to boilers and on Deck  
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 4 1/2" Are they connected to condenser, or to circulating pump circulating  
How are the pumps worked by levers from after engine  
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 before being launched  
Is the screw shaft tunnel watertight yes and fitted with a sluice door yes worked from top of cylinders

## BOILERS, &c.—

Number of Boilers two Description Circular Tubular Whether Steel or Iron steel  
Working Pressure 85 lbs Tested by hydraulic pressure to 170 lbs Date of test 1<sup>st</sup> August 1883  
Description of superheating apparatus or steam chest Horizontal dome  
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 34.7 feet Description of safety valves Direct-Spring 2 No. to each boiler two  
Area of each valve 9.62" 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 — Diameter of boilers 11' 6"  
Length of boilers 9' 6" description of riveting of shell long. seams Lap & double R circum. seams Lap D.R. Thickness of shell plates 4"  
Diameter of rivet holes 1 1/8" whether punched or drilled drilled pitch of rivets 4 1/2" Lap of plating 7 3/8" & 5"  
Per centage of strength of longitudinal joint 75 & 76 % working pressure of shell by rules 84.9 lbs size of manholes in shell 17" x 13"  
Size of compensating rings angle 4" x 4" x 3/4" No. of Furnaces in each boiler two  
Outside diameter 41 1/2" length, top 6' 8" bottom 6' 8" thickness of plates 7/8" description of joint butt S.R. if rings are fitted flanged  
Greatest length between rings 3' 3" working pressure of furnace by the rules 131 1/4 lbs combustion chamber plating, thickness, sides 3/8" back 3/8" top 3/8"  
Pitch of stays to ditto, sides 8 1/2" x 8 1/2" back 8 1/2" x 8 1/2" top round If stays are fitted with nuts or riveted heads both both ends working pressure of plating by rules 93 lbs Diameter of stays at smallest part 1 1/32" working pressure of ditto by rules 5582 lbs end plates in steam space, thickness 7/8"  
Pitch of stays to ditto 19" x 19" how stays are secured thru ends & nuts working pressure by rules 86 lbs diameter of stays at smallest part 2 3/16" working pressure by rules 5114 lbs Front plates at bottom, thickness 9/16" Back plates, thickness 9/16"  
Greatest pitch of stays 13 1/2" x 8 1/2" working pressure by rules 5950 lbs Diameter of tubes 3 1/2" pitch of tubes 4 3/4" x 4 3/4" thickness of tube plates, front 3/4" back 4" how stayed tubes & nuts pitch of stays 9 1/2" x 9 1/2" width of water spaces 1 1/2"  
Diameter of Superheater or Steam chest 3' 3" length 8' 0" thickness of plates 1/2" description of longitudinal joint Lap D.R. diam. of rivet holes 3/4"  
Pitch of rivets 2 1/2" working pressure of shell by rules 192 lbs 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 4" how stayed by 4 bolts thru each nut & both 2 3/4" diameter Superheater or steam chest; how connected to boiler by two malleable heads

DON109-0100



## DONKEY BOILER—

Description

Round Vertical 3 Cross Tubes

Made at Dundee

by whom made

Gourlay Bros &amp; Co

when made 1883

where fixed

on Deck

Working pressure 50 lbs

tested by hydraulic pressure to 100 lbs

No. of Certificate 274

fire grate area

16 feet

description of safety

valves Direct Spring Load

No. of safety valves one

area of each 8.3 sq

if fitted with easing gear

yes

if steam from main boilers can

enter the donkey boiler no

diameter of donkey boiler 5' 6"

length 11' 0"

description of riveting

Lap D.R. Line Lap S.R.

Thickness of shell plates 7/16"

diameter of rivet holes 3/4"

whether punched or drilled Punched

pitch of rivets

2 7/8"

lap of plating 3 7/8" + 2 1/2"

per centage of strength of joint 73 0/100

thickness of crown plates 9/16"

stayed by 5 burst stay

to sides of boiler

Diameter of furnace, top 3' 11 1/2"

bottom 4' 8 1/2"

length of furnace 5' 6"

thickness of plates 3/8"

description of joint

Lap S.R.

Thickness of furnace crown plates 1/2"

stayed by

Dished

working pressure of shell by rules

73 lbs

Working pressure of furnace by rules 50 lbs

diameter of uptake 16 1/2"

thickness of plates 3/8"

thickness of water tubes 3/16"

## SPARE GEAR. State the articles supplied:—

2 bolts each for top & bottom ends of connecting rods, 8 coupling bolts, 112 lbs bolts assorted, 1 set connecting rod brasses, piston springs, safety valve springs, spare valves for all pumps, 2 boiler tubes, lot boiler plate bolt iron assorted, &c. &c.

The foregoing is a correct description,

Gourlay Brothers. Manufacturer.

## General Remarks

(State quality of workmanship, opinions as to class, &amp;c.)

The Engines and Boilers of

this vessel have been built special survey.

The material and workmanship are of the best description.

The Engines and Boilers have been tested under steam and the safety valves set to 85 lbs per square inch working pressure, and in my opinion all are in good and safe working order and eligible to be entered into the Register Book with the distinctive mark  $\times$  L.M.C. 11.83.

It is submitted that this vessel is eligible to have the notification + L.M.C. 11.83 recorded

29/11/83

The amount of Entry Fee .. £ 2 : 0 : 0 received by me,

Special

.. £ 21 : 0 : 0

Donkey Boiler Fee .. £ :

Certificate (if required) .. £ :

To be sent as per margin.

(Travelling Expenses, if any, £ )

Committee's Minute

FRIDAY 30 NOV 1883

John Sturrock  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.  
Dundee District