

REPORT ON MACHINERY.

Port of Belfast

Received at London Office

No. in Survey held at Belfast Date, first Survey July 25 1896 Last Survey June 15 1898
Book. (Number of Visits.....)

on the Steel Screw Steamer "Beacon Grange" Tons { Gross 4042
Net 2620

Master Taylor Built at Belfast By whom built Workman Clark & Co Ltd When built 1898

Engines made at Belfast By whom made Workman Clark & Co Ltd when made 1898

Boilers made at Belfast By whom made Workman Clark & Co Ltd when made 1898

Registered Horse Power 650 Owners The Beacon Grange S.S. Co Ltd Port belonging to London

Net Horse Power as per Section 28 415 Howden Ross & Co Ltd (Mfrs) Spec. Light

Engines, &c.— Description of Engines Triple Expansion No. of Cylinders Three

Number of Cylinders 26 : 43 : 72 Length of Stroke 48" Revolutions per minute 75 Diameter of Screw shaft as per rule 13.28
as fitted 13.74

Diameter of Tunnel shaft as per rule 12.61 Diameter of Crank shaft journals 13 3/4 Diameter of Crank pin 13 3/4 Size of Crank webs 9 1/2 x 20
as fitted 13 1/2

Diameter of screw 14'-6" Pitch of screw 19'-0" No. of blades 4 State whether moveable Yes Total surface 85' 5"

No. of Feed pumps Two Diameter of ditto 4" Stroke 24" Can one be overhauled while the other is at work Yes

No. of Bilge pumps Two Diameter of ditto 4 1/2 Stroke 24" Can one be overhauled while the other is at work Yes

No. of Donkey Engines 4 Sizes of Pumps As per rule 17.28 No. and size of Suctions connected to both Bilge and Donkey pumps
Engine Room Three 3 1/2" Mumpford Valve 3/4 x 3/4 x 6" In Holds, &c. Nos 1, 2 & 3 holds, two 3 1/2" in each.

No. 4 hold well one 3 1/2" Tunnel drain 2 1/2"

No. of bilge injections 1 sizes 4 1/2" Connected to condenser, or to circulating pump See p. Is a separate donkey suction fitted in Engine room & size Yes. 3 1/2"

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 None

Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Larger valves, smaller 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

Are pipes carried through the bunkers Forward by 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 Before launch Is the screw shaft tunnel watertight Yes

Is it fitted with a watertight door Yes worked from Upper platform in Eng. Rm.

Boilers, &c.— (Letter for record S) Total Heating Surface of Boilers 5252.9 Free draught

No. and Description of Boilers Two single-ended Working Pressure 190 lbs Tested by hydraulic pressure to 380

Date of test 14.4.98 Can each boiler be worked separately Yes Area of fire grate in each boiler 62.56 No. and Description of safety valves to
each boiler Two Cocksburn Area of each valve 9.62 Pressure to which they are adjusted 193 lbs Are they fitted

with easing gear Yes Smallest distance between boilers or uptakes and bunkers or woodwork 13 1/4 See rule Mean diameter of boilers 15'-6"

Length 11'-6" Material of shell plates Steel Thickness 1 9/16 Description of riveting: circum. seams Mixed long. seams Hot straps
Butt straps

Diameter of rivet holes in long. seams 1 9/16 Pitch of rivets 10' 5" Lap of plates or width of butt straps 2 1/2"

Percentages of strength of longitudinal joint 91.2 Working pressure of shell by rules 209 lbs Size of manhole in shell 16 x 12"

Material of compensating ring 2'-8" x 2'-4" x 1 1/2" No. and Description of Furnaces in each boiler Three Morrison Material Steel Outside diameter 49 3/4"

Length of plain part top Thickness of plates 2 1/2" Description of longitudinal joint Welded No. of strengthening rings -

Working pressure of furnace by the rules 202 Combustion chamber plates: Material Steel Thickness: Sides 9/16 Back 9/16 Top 9/16 Bottom 3/4"

Pitch of stays to ditto: Sides 4 x 4 1/2" Back 4 1/2" Top 4 x 4 1/2" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 194

Material of stays Steel Diameter at smallest part 1 3/8" Area supported by each stay 56 1/4" Working pressure by rules 210 End plates in steam space:
Material Steel Thickness 1 1/16" Pitch of stays 15 1/2" How are stays secured As per rule Working pressure by rules 222 Material of stays Steel

STRAK
FLAT PLATE K
Of Bar Keel, at
GARBOARD OF
State actual
thickness in
way of Double
Bottom.
Main sheet
Spar sheet
DOUBLING OF
Length of E
and of S
thickness of S
POOP SIDES
BRIDGE SIDES
FORECASTLE S
Manufacture
Plates, Plating
Cobalt. Y
Bow-lain.
Ald. pla.
Ald. Dou.
Angles Ste.
Steel. Co
FRAMES ex
REVERSED
Spar d
LOWER MAS
Bowsprit
Topmasts,
Rigging, M
Sails.
EQUIPM
Number of
Certificate.
318 5 4
318 5 5
316 2 7
316 2 8
Collection
153 9 9
154 5 8
Number of
Certificate.
739
740
Steel wire
Boats
Pumps, N
Windlass
Engine R
What arrar
Coal Bun
Number of
Ceiling in
Cargo Ha
State size
Number of
Hull for
Bulwark
The above
Builder's



DONKEY BOILER— Description *Horizontal Multitubular. Two flues.*
 Made at *Belfast* By whom made *Woolman Clark & Co Ltd* When made *1898* Where fixed *In Stokers*
 Working pressure *90* tested by hydraulic pressure to *180* No. of Certificate *267* Fire grate area *36* Description of safety valves *Cockbour*
 No. of safety valves *2* Area of each *7.068* Pressure to which they are adjusted *90 lb* If fitted with easing gear *Yes* If steam from main boiler enter the donkey boiler *No* Diameter of donkey boiler *11' 0"* Length *10' 0"* Material of shell plates *Steel* Thickness *2*
 Description of riveting long seams *Crab. riv. lap* Diameter of rivet holes *15/16* Whether punched or drilled *Drilled* Pitch of rivets *—*
 Lap of plating *6 13/16* Per centage of strength of joint Rivets *84* Thickness of shell *end* plates *5/16 upper* Radius of do. *—* *pitch* of stays to do. *12 3/4*
 Dia. of stays *1 1/8* Diameter of furnace Top *37 1/2* Bottom *—* Length of furnace *6' 9"* Thickness of furnace plates *17/32* Description of joint *Sub. shape* Thickness of furnace crown plates *1/2: top 19/32* Stayed by *1 1/8 stay 8 1/2 pitch* Working pressure of shell by rules *92 lb*
 Working pressure of furnace by rules *99 lb* Diameter of tubes *3"* Thickness of uptake plates *front 5/16* Thickness of water tubes *8 1/8 thro 1/8 plate*

SPARE GEAR. State the articles supplied:— *Two top & two bottom end bolts & nuts for con. rod.*
2 main bearing bolts. Set coupling bolts. Set feed & they pump valves. H.P. piston packing. Small shape. Propeller shape. 2 blades. A.P. rod & valves. Valves for West pump & feed etc.
2 main & 1 D.K. boiler safety valve spring. Main check valve. D.K. check & feed escape valve.
 The foregoing is a correct description, *Roller & condenser tubes. Fire bars. Crow. Rollers & nuts*
James Patterson Manufacturer.

General Remarks (State quality of workmanship, opinions as to class, &c.)

Dates of Survey while building	During progress of work in shops	July 25. 1897	July 9 ^m	March 8. 12. 23. 25	April 1. 7. 14. 31.	May 31 ^{no}	28	
	During erection on board vessel	June 3.	Sept. 22. 28.	Oct 6. 27. 29.	Nov 24. 25.	Jan 5. 21. 24. 25. 31		Feb 21. 23. 24.
	Total No. of visits	Mar. 8. 28.	April 4. 15. 21. 23. 26.	May 3. 17. 21. 31.	June 10. 15.	Total 41.		

The machinery & boilers have been made & fitted under special survey & the workmanship is good throughout.
 The main steam pipes have been tested by water pressure to double the working pressure as required by the Rules.
 The boilers are supplied with forced draught on Howden's system
 Refrigerating engines (Carbonic Acid) have been fitted by H.S. Hall & Co of Deptford.
 Electric lighting fittings are by the Globe Electrical Co & the report will be sent shortly.
 The approved plans of donkey boiler & of the pumping arrangements accompany this report, also four shaft forging certificates. The tracing of main boilers was sent with the report on the sister vessel "Royal Grange" Ref. No. 4795
 In my opinion the machinery renders the vessel eligible for the notation **+ Lm C 6.98** (forced draught. Electric light) to be entered in the Register Book.

It is submitted that this vessel is eligible for **THE RECORD.** + **Lm.C. 6.98 F.D. Elec. Light.**

Certificate (if required) to be sent to *A.L.*
 21.6.98
 The amount of Entry Fee. £ 3 : 0 :
 Special £ 40 : 15 :
 Donkey Boiler Fee £ : :
 Travelling Expenses (if any) £ : :
 When applied for, 20th June 18.98
 When received, 24th June 18.98
 A. L. Jones
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute **FRI. 24 JUN 1898**
 Assigned **+ Lm C 6.98**
F.D. Elect. light

The Surveyors are requested not to write on or below the space for Committee's Minute.

