

REPORT ON MACHINERY.

Port of *Belfast*

Received at London Office

19

No. in Survey held at Reg. Book.

Date, first Survey *10th April 1886* (Last Survey *20th April 1886*)

on the *S.S. Saint Fillans* (Number of Visits *10*)
Master *C. D. Fitzgibbon* Built at *Belfast* By whom built *Laird & Moffat* Tons {Gross
Net
When built *1886*

Engines made at *Belfast* By whom made *"* when made *1886*

Boilers made at *"* By whom made *"* when made *"*

Registered Horse Power *320* Owners *Rankine Selman & Co.* Port belonging to *Liverpool*

Nom. Horse Power as per Section 28 *"* Is Refrigerating Machinery fitted for cargo purposes *"* Is Electric Light fitted *"*

ENGINES, &c.—Description of Engines *Triple Expansion* No. of Cylinders *3* No. of Cranks *3*

Dia. of Cylinders *24 1/2 - 37 - 64* Length of Stroke *48* Revs. per minute *"* Dia. of Screw shaft as per rule *1 3/4* Material of screw shaft *"*

Is the screw shaft fitted with a continuous liner the whole length of the stern tube *"* Is the after end of the liner made water tight in the propeller boss *"*

If the liner is in more than one length are the joints burned *"* If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive *"*

If two liners are fitted, is the shaft lapped or protected between the liners *"* Length of stern bush *"*

Dia. of Tunnel shaft as per rule *1 3/4* Dia. of Crank shaft journals as per rule *1 3/4* Dia. of Crank pin *1 3/4* Size of Crank webs *9 x 15* Dia. of thrust shaft under collars *"*

Dia. of screw *16 - 4* Pitch of Screw *16 - 0* No. of Blades *four* state whether moveable *No* Total surface *7 1/2 sq ft.*

No. of Feed pumps *two* Diameter of ditto *3 1/2* Stroke *20* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *two* Diameter of ditto *4* Stroke *20* Can one be overhauled while the other is at work *Yes*

No. of Donkey Engines *3* Sizes of Pumps *Belfast 10" Double Acting 10" Stroke* size of Suctions connected to both Bilge and Donkey pumps *"*

In Engine Room *Small Donkey 3 1/2" 1" Holds, &c.* Draw from *Sea, main bilges* *Small bilge tanks & bilges*

No. of Bilge Injections *one* sizes *5"* Connected to *condenser, or to circulating pump* Is a separate Donkey Suction fitted in Engine room & size *Yes*

Are all the bilge suction pipes fitted with roses *Yes* Are the roses in Engine room always accessible *Yes* Are the *valves* 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 valves & 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 *deck* *Have*

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 *Bilge suction* How are they protected *Work in with wood*

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* *By master cocks & hand return valves*

Dates of examination of completion of fitting of Sea Connections *Before launching 18-2-86* screw shaft and Propeller *"*

Is the Screw Shaft Tunnel watertight *Yes* Is it fitted with a watertight door *Yes* worked from *Upper deck.*

BOILERS, &c.—(Letter for record *"*) Manufacturers of Steel *"*

Total Heating Surface of Boilers *"* Is Forced Draft fitted *"* No. and Description of Boilers *Two - Fixed from both ends*

Working Pressure *160 lbs* Tested by hydraulic pressure to *320 lbs* Date of test *18-2-86* No. of Certificate *"*

Can each boiler be worked separately *Yes* Area of fire grate in each boiler *85* No. and Description of Safety Valves to each boiler *Two 3 1/4" diam.*

Smallest distance between boilers or uptakes and bunkers or woodwork *14"* Mean dia. of boilers *12-3* Length *17-3* Material of shell plate *Steel*

Thickness *1/8"* Range of tensile strength *"* Are the shell plates welded or flanged *"* Descrip. of riveting: cir. seams *Lat. Riv.*

long. seams *Lat. Riv.* diameter of rivet holes in long. seams *1 1/4"* Pitch of rivets *7-33 & 3-17* Top of plates or width of butt straps *Butt straps 20 1/2" broad*

Per centages of strength of longitudinal joint *82-9* Working pressure of shell by rules *165 lbs* Size of manhole in shell *12 x 16*

Size of compensating ring *Square plate 24 x 24 x 1 1/4"* No. and Description of Furnaces in each boiler *Six* Material *Steel* Outside diameter *36"*

Length of plain part *6-9"* Thickness of plates *3-32"* Description of longitudinal joint *Corrugated* No. of strengthening rings *"*

Working pressure of furnace by the rules *160 lbs* Combustion chamber plates: Material *Steel* Thickness: Sides *7/16"* Back *7/16"* Top *9/16"* Bottom *"*

Pitch of stays to ditto: Sides *7 1/2 x 7"* Back *7 1/2 x 7"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *161-8 lbs*

Material of stays *Steel* Diameter at smallest part *1 1/4"* *Steel* supported by each stay *"* Working pressure by rules *181-3 lbs* end plates in steam space: *"*

Material *Steel* Thickness *7/8"* Pitch of stays *15 x 14"* How are stays secured *Nuts & Washers* Working pressure by rules *"* Material of stays *Iron*

Diameter at smallest part *3"* Area supported by each stay *"* Working pressure by rule *202 lbs* Material of Front plates at bottom *Steel*

Thickness *13/16"* Material of Lower back plate *"* Thickness *"* Greatest pitch of stays *about 1/2* Working pressure of plate by rules *187-7 lbs*

Diameter of tubes *3 1/4"* Pitch of tubes *4 1/2 x 4 1/2"* Material of tube plates *Steel* Thickness: Front *7/8"* Back *2 1/2"* Mean pitch of stays *9 1/2 x 9"*

Pitch across wide water spaces *"* Working pressures by rules *"* Girders to Chamber tops: Material *"* Depth and thickness of girder at centre *"*

Length as per rule *"* Distance apart *"* Number and pitch of stays in each *"*

Working pressure by rules *"* Superheater or Steam chest; how connected to boiler *None* 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 holes *"*

Pitch of rivets *"* Working pressure of shell by rules *"* Diameter of flue *"* Material of flue plates *"* Thickness *"*

If 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 *"*

If not, state whether, and when, one will be sent? Report also sent on the hull of the



VERTICAL DONKEY BOILER— Manufacturers of Steel

No. _____ Description _____
 Made at _____ By whom made _____ When made _____ Where fixed _____
 Working pressure tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____ Fire grate area _____ Description of Safety _____
 Valves _____ No. of Safety Valves _____ Area of each _____ Pressure to which they are adjusted _____ Date of adjustment _____
 If fitted with easing gear _____ If steam from main boilers can enter the donkey boiler _____ Dia. of donkey boiler _____ Length _____
 Material of shell plates _____ Thickness _____ Range of tensile strength _____ Descrip. of riveting long. seams _____
 Dia. of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____ Lap of plating _____ Per centage of strength of joint _____ Rivets _____ Plates _____
 Working pressure of shell by rules _____ Thickness of shell crown plates _____ Radius of do. _____ No. of stays to do. _____ Dia. of stays _____
 Diameter of furnace Top _____ Bottom _____ Length of furnace _____ Thickness of furnace plates _____ Description of joint _____
 Working pressure of furnace by rules _____ Thickness of furnace crown plates _____ Stayed by _____
 Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____ Dates of survey _____

SPARE GEAR. State the articles supplied:— *two blades propeller, air pump rod, set of main slide valve spindles, set connecting rod bolts, two holding down bolts, set air pump valves & set furnace bars, 25 boiler tubes, a quantity of assorted bolts nuts & washers, 2 comb bottom piston rings for H.P. & I.P. cyls. 4 for each*

(Signed) The foregoing is a correct description, H. M. Moff Manufacturer.

Dates of Survey while building { During progress of work in shops - - }
 { During erection on board vessel - - }
 Total No. of visits _____ Is the approved plan of main boiler forwarded herewith _____

Dates of Examination of principal parts—Cylinders _____ Slides _____ Covers _____ Pistons _____ Rods _____
 Connecting rods _____ Crank shaft _____ Thrust shaft _____ Tunnel shafts _____ Screw shaft _____ Propeller _____
 Stern tube _____ Steam pipes tested _____ Engine and boiler seatings _____ Engines holding down bolts _____
 Completion of pumping arrangements _____ Boilers fixed _____ Engines tried under steam _____
 Main boiler safety valves adjusted _____ Thickness of adjusting washers _____
 Material of Crank shaft _____ Identification Mark on Do. _____ Material of Thrust shaft _____ Identification Mark on Do. _____
 Material of Tunnel shafts _____ Identification Marks on Do. _____ Material of Screw shafts _____ Identification Marks on Do. _____
 Material of Steam Pipes _____ Test pressure _____

General Remarks (State quality of workmanship, opinions as to class, &c. *At the underrated stage of the progress of the work upon the engines & boilers of this vessel, the survey of the machinery was transferred to Mr. Maxton, Cylinder head plate cast, then for H.P. cyls. back, all shafts in shop & crank, thrust & tunnel (2 by 2 1/2) propellers turned shells of main boiler built, tube plates flanged & riveted & comb chamber plates flanged Donkey boiler nearly completed. The material & workmanship is good & satisfactory so far as the same has been surveyed by me. (Signed) R. Ritchie.*
The machinery of this vessel has been built in accordance with the photographs approved by the Committee & likewise in accordance with an equal to Rules for Special Survey (New Machinery) the material & workmanship throughout are satisfactory; the boilers have been tested under hydraulic & the machinery under steam & were, giving entire satisfaction, and in my opinion eligible for the notification + L.M.C. in which entered in the Society's Register Book, with a date attached.

Certificate (if required) to be sent to Committee's Minute (The Surveyors are requested not to write on or below the space)

The amount of Entry Fee..	£ 3 : 0 0	When applied for,
Special	£ 26 : 0 019.....
Donkey Boiler Fee .. .	£ : : :	When received,
Travelling Expenses (if any) £	4 : 19 019.....

(Signed) James Maxton
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute *May 25, 1884*
 Assigned + L.M.C.

