

REPORT ON MACHINERY.

Port of *Belfast*

FRI. MAR 21 1902

Received at London Office

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

Date, first Survey *5 Feb 1901*

Last Survey *14 March 1902*

(Number of Visits *58*)

on the *S.S. "Niwaru"*

Gross Tons *6443*
Net Tons *4140*

Master *N. P. Schunck* Built at *Belfast* By whom built *Northway Clark & Co* when built *1902*

Engines made at *Belfast* By whom made *Northway Clark & Co* when made *1902*

Boilers made at _____ By whom made _____ when made _____

Registered Horse Power _____ Owners *Lysen Line L^d* Port belonging to *Londan*

Nom. Horse Power as per Section 28 *583* Is Electric Light fitted *Yes*

ENGINES, &c.—Description of Engines *Twin Screw Triple Expansion* No. of Cylinders *Six* No. of Cranks *Six*

Diameter of Cylinders *20 - 30 1/2 - 50* Length of Stroke *45* Revolutions per minute *45* Diameter of Screw shaft as per rule *12 3/4*

Diameter of Tunnel shaft as fitted *11 1/2* Diameter of Crank shaft journals *12* Diameter of Crank pin *12* Size of Crank webs *2 1/2 x 8 1/2*

Diameter of screw *14 - 9* Pitch of screw *18 - 0* No. of blades *3* State whether moveable *Yes* Total surface *58 sq ft.*

No. of Feed pumps *Two* Diameter of ditto *3 1/2* Stroke *24* Can one be overhauled while the other is at work *Yes*

No. of Bilge pumps *Two* Diameter of ditto *6* Stroke *24* Can one be overhauled while the other is at work *Yes*

No. of Donkey Engines *Four* Sizes of Pumps *10 x 10 x 10 1/2, 10 x 8 x 24, 8 x 5 x 8, 8 x 5 x 4* and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room *3 - 3 1/2* *1 - 2 1/2 and 10 - 3 1/2*

No. of bilge injection *Two* sizes *6 1/2* Connected to condenser, or to circulating pump *Rumpf* as a separate donkey suction fitted in Engine room of size *10 - 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 in 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 *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 *Below*

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 *For hold suction* How are they protected *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*

When were stern tube, propeller, screw shaft, and all connections examined in dry dock *Before launching* screw shaft tunnel watertight *Tested*

Is it fitted with a watertight door *Yes* worked from *Upper deck*

BOILERS, &c.— (Letter for record *S*) Total Heating Surface of Boilers *8266 sq ft* Is forced draft fitted *Yes*

No. and Description of Boilers *4 - Single Ended Cylind^r* Working Pressure *200 lb* Tested by hydraulic pressure to *400 lb*

Date of test *8-1-02* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *52 sq ft* No. and Description of safety valves to each boiler *Two - Sweet Spring* Area of each valve *8' 29 sq* Pressure to which they are adjusted *205 lb* Are they fitted with easing gear *Yes*

Smallest distance between boilers or uptakes and bunkers *woodwork 22* Mean diameter of boilers *13 - 9*

Length *11 - 6* Material of shell plates *Steel* Thickness *1 1/32* Description of riveting: circum. seams *Lap, Double* seams *Butt Double*

Diameter of rivet holes in long. seams *1 1/32* Pitch of rivets *9 1/2* ~~lap of plates~~ width of butt straps *20 3/8*

Per centages of strength of longitudinal joint rivets *84.9* Working pressure of shell by rules *230 lb* Size of manhole in shell *16 x 12*

Size of compensating ring *M. Nells* No. and Description of Furnaces in each boiler *3 - Right angle* Material *Steel* Outside diameter *43 1/2*

Length of plain part top *6* bottom *3 3/4* Thickness of plates crown *3 3/4* bottom *3 3/4* Description of longitudinal joint *Weld* No. of strengthening rings *0*

Working pressure of furnace by the rules *225 lb* combustion chamber plates: Material *Steel* Thickness: Sides *3/32* Back *5/8* Top *1/32* Bottom *1*

Pitch of stays to ditto: Sides *8 x 7* Back *8 x 8* Top *8 1/2 x 7* If stays are fitted with nuts or riveted heads *Nuts inside* Working pressure by rules *211 lb*

Material of stays *Steel* Diameter at smallest part *1 1/2, 1 1/2, 1 1/2* Area supported by each stay *64 sq* Working pressure by rules *220 lb* and plates in steam space:

Material *Steel* Thickness *1 1/2* Pitch of stays *16 1/2 x 15* How are stays secured *Nuts & Washers* Working pressure by rules *262 lb* Material of stays *Steel*

Diameter at smallest part *2 1/2 x 3 1/2* Area supported by each stay *252 sq* Working pressure by rules *286 lb* Material of Front plates at bottom *Steel 3/32*

Thickness *1* Material of Lower back plate *Steel* Thickness *3/4* Greatest pitch of stays *16* Working pressure of plate by rules *332 lb*

Diameter of tubes *2 1/2* Pitch of tubes *3 5/8 x 3 1/2* Material of tube plates *Steel* Thickness: Front *5/16* Back *1/16* Mean pitch of stays *11 1/2 x 1 1/4*

Pitch across wide water spaces *1 3/8* Working pressures by rules *338 lb* Girders to Chamber tops: Material *Steel* Depth and thickness of girder at centre *8 1/2 x (3/4 x 2)* Length as per rule *28 1/2* Distance apart *8 1/2 x 1 1/2* Number and pitch of Stays in each *3 - 7*

Working pressure by rules *221 lb* 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 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? Is a Report also sent on the Hull of the Ship?



DONKEY BOILER— Description

Made at _____ By whom made _____ When made _____ Where fixed _____

Working pressure tested by hydraulic pressure to _____ No. of Certificate _____ Fire grate area _____ Description of safety valves _____

No. of safety valves _____ Area of each _____ Pressure to which they are adjusted _____ If fitted with easing gear _____ If steam from main boilers can enter the donkey boiler _____

Diameter of donkey boiler _____ Length _____ Material of shell plates _____ Thickness _____

Description of riveting long. seams _____ Diameter of rivet holes _____ Whether punched or drilled _____ Pitch of rivets _____

Lap of plating _____ Per centage of strength of joint _____ Rivets _____ 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 _____ Thickness of furnace crown plates _____ Stayed by _____ Working pressure of shell by rules _____

Working pressure of furnace by rules _____ Diameter of uptake _____ Thickness of uptake plates _____ Thickness of water tubes _____

SPARE GEAR. State the articles supplied:— *Propeller shaft; 2 Cast iron propeller blades; main crank pin bushes; main piston rods bushes; air pump rods & bushes; two slide valve spindles for H.P. & L.P.; sets packing rings for H.P. M.P. & L.P. cylinders; boiler escape valves & springs; boiler & condenser tubes and other gear. Also all gear to own Rules.*

The foregoing is a correct description,
 FOR WORKMAN CLARK & CO., LIMITED
 M. V. Bell. Manufacturer.

Dates of Survey while building

| | |
|----------------------------------|--|
| During progress of work in shops | 1901, Feb 5, May 13, June 4, 7, 11, 15, 20, 26, 27, July 2, 5, 10, 24, 26, 31, Aug 5, 9, 14, 16, 20 |
| During erection on board vessel | Sept 13, 19, Oct 4, 8, 10, 15, 23, 25, 30, Nov 5, 6, 13, 15, 19, 22, 29, Dec 3, 5, 6, 13, 14, 20, 23, 29 |
| Total No. of visits | 58 |

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

ENGINES—Length of stern bush *4'-6"* Diameter of crank shaft journals *11'-46"* as per rule *12'-0"* as fitted Diameter of thrust shaft under collars *12"*

BOILERS—Range of tensile strength *28-32* Are they welded or flanged *No* **DONKEY BOILERS**—No. Range of tensile strength *2*

Is the approved plan of main boiler forwarded herewith *Yes* Is the approved plan of donkey boiler forwarded herewith

Lower an propeller shaft continuous, & after end fits tight in propeller box. Area shaft hydraulically pressed into steel.

The machinery of this vessel has been constructed under Special Survey, and in accordance with the Rules. The material and workmanship is of good description.

The machinery has been securely fitted on board, and on trial under steam in Belfast Lough, it worked satisfactorily. In my opinion, it is eligible for record + L.M.C. 3.02, Forced Draft Electric Light & Refrigerating Machinery.

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 3.02 FD Elec. light. Ref. mach.

CM.
25.3.02
25.3.02

The amount of Entry Fee... £ 3 : - :
 Special ... £ 49 : 3 :
 Donkey Boiler Fee ... £ : :
 Travelling Expenses (if any) £ : :
 When applied for, 14-3-1902
 When received, 29/3/02

R. J. Bennett
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute
 Assigned
 TUES. MAR 25 1902
 + L.M.C. 3.02 FD



Form No. 1B. Certificate (if required) to be sent to the Surveyors are requested not to write on or below the space for Committee's Minute.