

REPORT ON MACHINERY

MON 27 FEB 1893

Port of *Barrow in Furness*

No. in Survey held at *Barrow* Date, first Survey *Mar 8th 1892* Last Survey *Feb 25th 1893*
 Reg. Book. *SS "Northern Light"* (Number of Visits *87*)
 on the *SS "Northern Light"* Gross *3893.34* Tons Net *2551.93*
 Master *Parton* Built at *Barrow* By whom built *Naval Construction & Armaments Co^{ld}* When built *1893*
 Engines made at *Barrow* By whom made *Naval Construction & Armaments Co^{ld}* when made *1893*
 Boilers made at *do* By whom made *do* when made *1893*
 Registered Horse Power *240* Owners *Lane & Co^{rs} Andrew* Port belonging to *London*
 Nom. Horse Power as per Section 28 *345*

ENGINES, &c.— Description of Engines *Triple Expansion (3 Cranks)* No. of Cylinders *Three*
 Diameter of Cylinders *26" 42 1/2" 69"* Length of Stroke *45"* Revolutions per minute *75* Diameter of Screw shaft *as per rule 2 1/2"*
 Diameter of Tunnel shaft *as per rule 1 1/2"* Diameter of Crank shaft journals *2 3/4"* Diameter of Crank pin *1 3/2"* Size of Crank webs *2' 2" x 8"*
 Diameter of screw *16' 0"* Pitch of screw *17' 3"* No. of blades *4* State whether moveable *Yes* Total surface *73 #*
 No. of Feed pumps *two* Diameter of ditto *4"* Stroke *23"* Can one be overhauled while the other is at work *Yes*
 No. of Bilge pumps *two* Diameter of ditto *5 1/8"* Stroke *23"* Can one be overhauled while the other is at work *Yes*
 No. of Donkey Engines *2 in 8 Room* Sizes of Pumps *8 x 7 1/2 x 10, 7 1/2 x 4 3/4 x 10* No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room *Two 3 1/2"* In Holds, &c. *two 3 1/2" in after cargo hold, one 4"*
Donkey suction in fore cargo hold
 No. of bilge injections *one* sizes *7 1/2"* Connected to condenser, or to circulating pump *Yes* 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 *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 *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 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 *Engines aft*
 Is it fitted with a watertight door *Yes* worked from *—*

BOILERS, &c.— (Letter for record *S*) Total Heating Surface of Boilers *5558.8 #*
 No. and Description of Boilers *Three, cyl multitubular* Working Pressure *160* Tested by hydraulic pressure to *320*
 Date of test *30-11-92* Can each boiler be worked separately *Yes* Area of fire grate in each boiler *63 #* No. and Description of safety valves to
 each boiler *Two Spring loaded* Area of each valve *7.06* Pressure to which they are adjusted *160 lbs* Are they fitted
 with easing gear *Yes* Smallest distance between boilers or uptakes and bunkers or woodwork *12"* Mean diameter of boilers *14-1"*
 Length *10' 6"* Material of shell plates *Steel* Thickness *1/4"* Description of riveting: circum. seams *Lap Triple* long. seams *1/3 Straps Triple*
 Diameter of rivet holes in long. seams *1/9 3/32"* Pitch of rivets *8 1/2" 4 3/4"* Lap of plates or width of butt straps *135 18 5/8"*
 Per centages of strength of longitudinal joint *84.9* Working pressure of shell by rules *163.2* Size of manhole in shell *15" x 19 1/2"*
 Size of compensating ring *27 x 36 x 1 1/2"* No. and Description of Furnaces in each boiler *Three corrugated* Material *Steel* Outside diameter *3' 8"*
 Length of plain part *top 168.2* Thickness of plates *crown 1/4"* Description of longitudinal joint *Welded* No. of strengthening rings *—*
 Working pressure of furnace by the rules *168.2* Combustion chamber plates: Material *Steel* Thickness: Sides *9/16"* Back *9/16"* Top *9/16"* Bottom *5/8"*
 Pitch of stays to ditto: Sides *8 x 7 3/4"* Back *8 x 7 1/2"* Top *8 x 7 3/4"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *170*
 Material of stays *Steel* Diameter at smallest part *1 1/2"* Area supported by each stay *62* Working pressure by rules *160* End plates in steam space:
 Material *Steel* Thickness *3/8"* Pitch of stays *16 x 16"* How are stays secured *Nuts* Working pressure by rules *164.2* Material of stays *Steel*
 Diameter at smallest part *2 1/2"* Area supported by each stay *25.6* Working pressure by rules *173.5* Material of Front plates at bottom *Steel*
 Thickness *7/8"* Material of Lower back plate *Steel* Thickness *3/4"* Greatest pitch of stays *14"* Working pressure of plate by rules *161*
 Diameter of tubes *3 1/4"* Pitch of tubes *4 1/2" 4 3/8"* Material of tube plates *Steel* Thickness: Front *13/16"* Back *13/16"* Mean pitch of stays *14 1/8"*
 Pitch across wide water spaces *14 3/4"* Working pressures by rules *171* Girders to Chamber tops: Material *Steel* Depth and
 thickness of girder at centre *7 x 1"* Length as per rule *24"* Distance apart *7 3/4"* Number and pitch of Stays in each *two 8"*
 Working pressure by rules *163* 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 *—*

Form No. 8-4292



DONKEY BOILERS Description *Two Vertical, four cross tubes*
 Made at *Gateshead* By whom made *Clark Chapman & Co* When made *4/10/92* Where fixed *above main boiler*
 Working pressure *100* tested by hydraulic pressure to *200* No. of Certificate *3975* Fire grate area *24.5* Description of safety valves *Spring loaded*
 No. of safety valves *one to each boiler* Area of each *7.6* Pressure to which they are adjusted *100* If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no* Diameter of donkey boiler *6.6* Length *13.0* Material of shell plates *Steel* Thickness *7/32*
 Description of riveting long seams *L & D* Diameter of rivet holes *29/32* Whether punched or drilled *no* Pitch of rivets *2.25*
 Lap of plating *7/16* Per centage of strength of joint Rivets *7* Thickness of shell crown plates *3/2* Radius of do. *5.0* No. of Stays to do. *6*
 Dia. of stays *1 7/8* Diameter of furnace Top *5.2* Bottom *5.6 3/4* Length of furnace *5.3* Thickness of furnace plates *5/8* Description of joint *L S* Thickness of furnace crown plates *3/2* Stayed by *as shell crown* Working pressure of shell by rules *100*
 Working pressure of furnace by rules *110 lbs* Diameter of uptake *1 1/2* Thickness of uptake plates *7/16* Thickness of water tubes *3/8*

SPARE GEAR. State the articles supplied:—
2 connecting rod top end bolts & nuts, 2 bottom end ditto, 2 main bearing bolts six coupling bolts, 1 set feed pump valve & seats, 1 set bilge ditto, 1 slide valve spindle, 1 pair crank pin brasses, 1 pair top end brasses, 1 air pump rod & bucket, 1 eccentric sheave & brass liner, 4 propeller blades, tail end shaft, 1 crank shaft, and a number of other articles.

The foregoing is a correct description,
 Manufacturer *Williamson*

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

The Engines & Boilers of this vessel have been constructed under Special Survey in accordance with the Rules, the material and workmanship employed are of the best description, when fitted in the vessel the engines were tried at full speed and worked satisfactorily and the boiler with full steam on were examined and found tight.

This vessel is fitted with the Electric Light see separate Report

The Machinery of this vessel is in good order and safe working condition and in my opinion eligible to be notified in the Register Book LMC 2-93

It is submitted that this vessel is eligible for THE RECORD + LMC 2 93
Feb 27 2 93

Certificate (if required) to be sent to:
 The amount of Entry Fee. . . £ 2 : 0 :
 Special £ 37 : 5 :
 Donkey Boiler Fee £ : :
 Travelling Expenses (if any) £ : :
 When applied for, *25 Feb 93*
 When received, *27 Feb 93*

Jas Easthope
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute
 Assigned
 TUES. 28 FEB 1893
 MACHINERY CERTIFICATE WRITTEN.
 + LMC 2, 93

