

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 Carlton Built at Barrow By whom built Naval Construction & Armaments Co. Ltd When built 1893
 Engines made at Barrow By whom made Naval Construction & Armaments Co. Ltd when made 1893
 Boilers made at do By whom made do when made 1893
 Registered Horse Power 240 Owners Lane & Mr 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 $\frac{1}{2}$ " 69" Length of Stroke 45" Revolutions per minute 75 Diameter of Screw shaft as per rule 2 $\frac{1}{2}$ "
 Diameter of Tunnel shaft as per rule Diameter of Crank shaft journals 2 $\frac{3}{4}$ " Diameter of Crank pin 3 $\frac{1}{2}$ " 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 $\frac{1}{2}$ $\frac{1}{2}$
 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 $\frac{1}{8}$ " 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 $\frac{1}{2}$ " x 10" 7 $\frac{1}{2}$ " x 4 $\frac{3}{4}$ " x 10" No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room Two 3 $\frac{1}{2}$ " In Holds, &c. two 3 $\frac{1}{2}$ " in after cargo hold, one 4"
donkey suction in fore cargo hold
 No. of bilge injections one sizes 7 $\frac{1}{2}$ " Connected to condenser, or to circulating pump yes Is a separate donkey suction fitted in Engine room & size yes 3 $\frac{1}{2}$ "
 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 yes
 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 yes

BOILERS, &c.— (Letter for record S) Total Heating Surface of Boilers 5558.8 $\frac{1}{2}$ $\frac{1}{2}$
 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 $\frac{1}{2}$ $\frac{1}{2}$ 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 $\frac{1}{4}$ " Description of riveting: circum. seams Lap Triple long. seams 10/3 Strap Triple
 Diameter of rivet holes in long. seams 1/932 Pitch of rivets 8 $\frac{1}{2}$ " 4 $\frac{3}{4}$ " Lap of plates or width of butt straps 135 18 5/8
 Per centages of strength of longitudinal joint 84.2 Working pressure of shell by rules 163.2 Size of manhole in shell 15" x 19 $\frac{1}{2}$ "
 Size of compensating ring 2'7" x 3'6" x 1 $\frac{1}{2}$ " No. and Description of Furnaces in each boiler Three corrugated Material Steel Outside diameter 3'8"
 Length of plain part top Thickness of plates crown Description of longitudinal joint welded No. of strengthening rings yes
 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 $\frac{3}{4}$ " Back 8 x 7 $\frac{1}{2}$ " Top 8 x 7 $\frac{3}{4}$ " If stays are fitted with nuts or riveted heads nuts Working pressure by rules 170
 Material of stays Steel Diameter at smallest part 9/32 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 1/8 Area supported by each stay 25.6 Working pressure by rules 73.5 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 $\frac{1}{4}$ " Pitch of tubes 4 $\frac{1}{2}$ " 4 $\frac{3}{8}$ " Material of tube plates Steel Thickness: Front 13/16" Back 13/16" Mean pitch of stays 14 $\frac{1}{8}$ "
 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 yes Can the superheater be shut off and the boiler worked
 separately yes Diameter yes Length yes Thickness of shell plates yes Material yes Description of longitudinal joint yes Diam. of rivet
 holes yes Pitch of rivets yes Working pressure of shell by rules yes Diameter of flue yes Material of flue plates yes Thickness yes
 If stiffened with rings yes Distance between rings yes Working pressure by rules yes End plates: Thickness yes How stayed yes
 Working pressure of end plates yes Area of safety valves to superheater yes Are they fitted with easing gear yes

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 *7/8* Thickness of shell crown plates *3/8* 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 *3/8* Stayed by *as shell crown* Working pressure of shell by rules *100*
 Working pressure of furnace by rules *110 lbs* Diameter of uptake *6 1/2* Thickness of uptake plates *7/16* Thickness of water tubes *3/8*
3 rows 1 1/2 off stays
12. Pitch nuts in & out

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.

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 boilers 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 : | When applied for, 25 Feb 93 |
| Special | £ 37 : 5 : | |
| Donkey Boiler Fee | £ : : | When received, 27 Feb 93 |
| Travelling Expenses (if any) £ | : : | |

[Signature]

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

Committee's Minute

TUES. 28 FEB 1893

MACHINERY CERTIFICATE WRITTEN.

Assigned

+ LMC 2, 93



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