

REPORT ON MACHINERY.

No. 690.1.

Date of writing Report 24 Jan 1911 When handed in at Local Office Jan 30th 1911 Port of Belfast
 No. in Survey held at Belfast Date, First Survey 4 June 1910 Last Survey 21 Jan 1911
 Reg. Book. 331 Sachsen (Number of Visits 74)
 on the 331 Sachsen
 Master A. Wagner Built at Belfast By whom built Harland & Wolff Ld Tons { Gross 7986
 Engines made at Belfast By whom made - when made 1911 Net 5113
 Boilers made at - By whom made - when made -
 Registered Horse Power - Owners Hamburg-Amerikanische Packetfahrt-Actien-Gesellschaft Port belonging to Hamburg
 Nom. Horse Power as per Section 28 697 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Quadruple Expansion No. of Cylinders 4 No. of Cranks 4
 Dia. of Cylinders 26"-39"-56"-78½" Length of Stroke 54" Revs. per minute 78 Dia. of Screw shaft as per rule 16.6 Material of Steel
 as fitted 16.875 screw shaft)
 Is the screw shaft fitted with a continuous liner the whole length of the stern tube No Is the after end of the liner made water tight
 in the propeller boss Yes 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 Yes Length of stern bush 64"
 Dia. of Tunnel shaft as per rule 14.4 Dia. of Crank shaft journals as per rule 15.1 Dia. of Crank pin 15½" Size of Crank web 29½" x 11½" Dia. of thrust shaft under
 collars 15½" Dia. of screw 18"-9" Pitch of Screw 18"-9" No. of Blades 4 State whether moveable Yes Total surface 10528 sq ft.
 No. of Feed pumps 2 Diameter of ditto 5½" Stroke 30" Can one be overhauled while the other is at work Yes
 No. of Bilge pumps 2 Diameter of ditto 5" Stroke 30" Can one be overhauled while the other is at work Yes
 No. of Donkey Engines 4 Sizes of Pumps 2 10½" x 8" x 26" No. and size of Suctions connected to both Bilge and Donkey pumps
 In Engine Room 3-3½" x 3-2½" Reverend 9" x 8" x 12" Waltham 9" x 10" x 12" Holds, &c. 13-3½" x 6-2½"

No. of Bilge Injections 1 sizes 10" Connected to condenser, or to circulating pump Pumps a separate Donkey Suction fitted in Engine room & size 4"
 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 ✓
 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 Both
 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 Four hold suction tanks How are they protected Warp casings
 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

Dates of examination of completion of fitting of Sea Connections 14-11-10 of Stern Tube 16-11-10 Screw shaft and Propeller 16-11-10
 Is the Screw Shaft Tunnel watertight Stated to be Is it fitted with a watertight door Yes worked from from E. Room Top platform

BOILERS, &c.—(Letter for record S) Manufacturers of Steel W. Caldwell & Sons Ld.
 Total Heating Surface of Boilers 19160 sq ft. Forced Draft fitted Yes No. and Description of Boilers 4 Single End Cyl.
 Working Pressure 215 lbs Tested by hydraulic pressure to 430 lbs Date of test 26-10-10 No. of Certificate 434
 Can each boiler be worked separately Yes Area of fire grate in each boiler 62 sq ft. No. and Description of Safety Valves to
 each boiler Two - direct Spring Area of each valve 9.62 sq in Pressure to which they are adjusted 215 lbs Are they fitted with easing gear Yes
 Smallest distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 15'-6" Length 11'-0" Material of shell plates Steel
 Thickness 1½" Range of tensile strength 29-33 Tons Are the shell plates welded or flanged No Descrip. of riveting: cir. Lap Joints
 long. seams Butt Joints Diameter of rivet holes in long. seams 1½" Pitch of rivets 10½" Lap of plates or width of butt straps 28½"
 Per centages of strength of longitudinal joint 84.3 Working pressure of shell by rules 244 lbs Size of manhole in shell 16" x 18"
 Size of compensating ring M. Nale No. and Description of Furnaces in each boiler 3 - M. Nale Material Steel Outside diameter 49½"
 Length of plain part top 0 Thickness of plates bottom 2 3/8" Description of longitudinal joint Mild No. of strengthening rings ✓
 Working pressure of furnace by the rule 238 lbs Combustion chamber plates: Material Steel Thickness: Sides 2½" Back 2½" Top 2½" Bottom 1½"
 Pitch of stays to ditto: Sides 7½" x 7½" Back 7½" x 7½" Top 7½" x 7½" If stays are fitted with nuts or riveted heads Nuts under Working pressure by rules 251 lbs
 Material of stay Steel Diameter at smallest part 1½" Area supported by each stay 68 sq in Working pressure by rules 274 lbs End plates in steam space:
 Material Steel Thickness 1½" Pitch of stays 16" x 15½" How are stays secured Nuts & Washers Working pressure by rules 246 lbs Material of stays Steel
 Diameter at smallest part 2½" x 2½" Area supported by each stay 244 sq in Working pressure by rules 278 lbs Material of Front plates at bottom Steel
 Thickness 1½" Material of Lower back plate Steel Thickness 1½" Greatest pitch of stays 14" Working pressure of plate by rule 241 lbs
 Diameter of tubes 2½" Pitch of tubes 3½" x 3½" Material of tube plate Steel Thickness: Front 1½" Back 1½" Mean pitch of stays 7½" x 7½"
 Pitch across wide water spaces 13½" Working pressures by rules 388 lbs with 8" doubler Girders to Chamber tops: Material Iron Depth and
 thickness of girder at centre 9" x (8" x 2) Length as per rule 31½" Distance apart 8" to 7" Number and pitch of stays in each 3-7½"
 Working pressure by rules 232 lbs 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 -

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 adjusted² 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

Working pressure of shell by rules Thickness of shell crown plates Radius of do. No. of stays to do. Dia. of stays Plates

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 Radius of do. Stayed by

Diameter of uptake Thickness of uptake plates Thickness of water tubes Dates of survey

SPARE GEAR. State the articles supplied:— Propeller blade; main crank pin bushes; main cross head bushes; air pump bucket rods & head valve; set of piston rings H.P. & M.P. Valve spindle H.P. & rock bush; overhauls strap; & gun main bearing braces for diesel pump engine etc. & all sent to Lloyd's.

The foregoing is a correct description, Rules extra.

Harland & Wolff Ltd. Manufacturer.

Dates of Survey while building { During progress of work in shops - - { 1910. April 2, 10, 22. May 2, 6, 12, 14, 26. June 1, 4, 10, 15. July 10, 27. Aug 3
 { During erection on board vessel - - { 24, 26, 30, 31. Sep 1, 5, 8, 13, 14, 20, 28, 29, 30. Oct 4, 6, 10, 12, 14, 20, 21, 24. Nov 5, Jan 2
 Total No. of visits 74

Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts—Cylinders / 4-5 Slide 10 " donkey " "

Connecting rods 9-11-10 Crank shaft 7-6 Thrust shaft 8-6 Tunnel shafts 8-6 Screw shafts 74-10-10 Pistons Rods Propeller 8-11-10

Stern tube 5-11-10 Steam pipes tested 11-11-10 Engine and boiler seatings 20-12-10 Engines holding down bolts 7-12-10

Completion of pumping arrangements 20-1-11 Boilers fixed 7-12-10 Engines tried under steam 10-1-11

Main boiler safety valves adjusted 10-1-11 Thickness of adjusting washers 8-4-32

Material of Crank shaft I.S.T. Identification Mark on Do. LLOYD'S 7-7-8 Material of Thrust shaft DO Identification Mark on Do. DO

Material of Tunnel shafts DO Identification Marks on Do. 24-10-10 Material of Screw shafts DO Identification Marks on Do. DO

Material of Steam Pipes S.I.C.'s drum & Test Test pressure 426 lbs sq.

General Remarks (S.I.C.)

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

The machinery of this vessel has been constructed under Special License, and in accordance with the Rules. The workmanship and the materials are of good description throughout, and on trial under steam, the machinery worked satisfactorily.

In my opinion, it is eligible for record + L.M.C. 1-11, with notation: Forced Draft & Electric Light.

It is submitted that
this vessel is eligible for
THE RECORD. + LMC 1-11

FD

The amount of Entry Fee .. £	3 : 0 :	When applied for,
Special £	54 : 14 :	27-5-1911
Donkey Boiler Fee £	:	When received,
Travelling Expenses (if any) £	:	6/2/11

FRI. 3 FEB 1911

Committee's Minute

Assigned

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

+ Lm 6.11

MECHANICAL CERTIFICATE
WRITTEN

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Foundation