

REPORT ON MACHINERY.

No. 749

JULY 6 1909

Port of Bergen

Received at London Office

No. in Survey held at Bergen

Date, first Survey January 4th Last Survey July 3rd 1909

Reg. Book.

New on the Steel screw steamer "Karlsborg"

(Number of Visits 44)

Tons { Gross 1082.17
Net 633.55

Master E. Rødström Built at Bergen

By whom built Bergens Mek. Værksted

When built 1909

Engines made at Bergen

By whom made Bergens Mek. Værksted when made 1909

Boilers made at Bergen

By whom made Bergens Mek. Værksted when made 1909

Registered Horse Power 141

Owners Consul Arthur Du Rietz

Port belonging to Norw

Nom. Horse Power as per Section 28 138.44 Is Refrigerating Machinery fitted for cargo purposes No

Is Electric Light fitted No

ENGINES, &c.—Description of Engine Vertical triple expansion No. of Cylinders Three No. of Cranks Three

Dia. of Cylinders 14" - 26 1/2" - 46" Length of Stroke 30" Revs. per minute 83 Dia. of Screw shaft as per rule 10 1/2" Material of screw shaft as fitted 10 1/2" Steel

Is the screw shaft fitted with a continuous liner the whole length of the stern tube no liner 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 4'-0"

Dia. of Tunnel shaft as per rule 8 3/8" Dia. of Crank shaft journals as per rule 9" Dia. of Crank pin 9" Size of Crank webs 6" x 16 7/8" Dia. of thrust shaft under collars 9" Dia. of screw 12'-0" Pitch of Screw 12'-0" No. of Blades 4 State whether moveable no Total surface 50

No. of Feed pumps 2 Diameter of ditto 2 1/2" Stroke 16" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 2 3/4" Stroke 16" Can one be overhauled while the other is at work Yes

No. of Donkey Engines Two Sizes of Pumps 4 1/2" x 4" & 5 1/2" x 5" Duplex No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room One 2 1/2" separate suction, one 2 1/4" & two off 2" dia. Holds, &c. Two off 2" dia. to fore hold; four off, 2" dia. to after hold, and one off 2 1/4" to after well. Bilge & tank pipe arrangements all as approved.

No. of Bilge Injections One sizes 4" dia. connected to circulating pump Yes Is a separate Donkey Suction fitted in Engine room & size Yes, one 2 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 none

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 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 cross bunkers Bilge suction to fore hold How are they protected Strong wooden box

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 May 24th of Stern Tube May 24th Screw shaft and Propeller May 24th

Is the Screw Shaft Tunnel watertight Yes, tested Is it fitted with a watertight door Yes worked from engine room top platform

BOILERS, &c.—(Letter for record North) of Manufacturers of Steel The Lanarkshire Steel Co. Ltd. Motherwell & Glasgow Stewart & Lloyd, Ltd. Motherwell

Total Heating Surface of Boilers 2347 Is Forced Draft fitted No No. and Description of Boilers Two ordinary marine

Working Pressure 180 LBS Tested by hydraulic pressure to 360 LBS Date of test June 9th No. of Certificate ✓

Can each boiler be worked separately Yes Area of fire grate in each boiler 32 1/2 No. and Description of Safety Valves to each boiler Two off. Spring loaded Area of each valve 8.3 Pressure to which they are adjusted 180 LBS Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers 1 1/2" S.B. x 10" P.S. Mean dia. of boilers 11'-1 3/4" Length 10'-0" Material of shell plates Steel

Thickness 3 1/2" - 3 3/4" Range of tensile strength 26.4 to 30.6 tons Are the shell plates flanged Yes Descrip. of riveting: cir. seams Single

long. seams Treble Diameter of rivet holes in long. seams 1 3/8" Pitch of rivets 6.78 Lap of plates or width of butt straps 15 3/4"

Per centages of strength of longitudinal joint rivets 94.65 Working pressure of shell by rules 187.9 LBS Size of manhole in shell 12" x 16"

Size of compensating ring McNeil's No. and Description of Furnaces in each boiler Two corrugated Material Steel Outside diameter 3'-4 1/2"

Length of plain part top 7'-5 1/2" Thickness of plates 8" Description of longitudinal joint welded No. of strengthening rings none

Working pressure of furnace by the rules 87 LBS Combustion chamber plates: Material Steel Thickness: Sides 5/8" Back 5/8" Top 5/8" Bottom 1"

Pitch of stays to ditto: Sides 7" x 7 1/4" Back 7 1/4" x 7 1/4" Top 8" x 7" If stays are fitted with riveted heads Yes Working pressure by rules 190 LBS

Material of stays Steel Diameter at smallest part 1 3/8" Area supported by each stay 52.56 Working pressure by rules 197 LBS End plates in steam space:

Material Steel Thickness 1" Pitch of stays 5 3/4" x 15 3/4" How are stays secured double nuts Working pressure by rules 180.6 LBS Material of stays Steel

Diameter at smallest part 2 1/2" Area supported by each stay 248.06 Working pressure by rules 195 LBS Material of Front plates at bottom Steel

Thickness 7/8" Material of Lower back plate Steel Thickness 3/2" Greatest pitch of stays 7 1/4" x 13" Working pressure of plate by rules 220 LBS

Diameter of tubes 3 1/4" Pitch of tubes 4 1/4" x 4 1/2" Material of tube plates Steel Thickness: Front 3/8" Back 1/2" Mean pitch of stays 8 1/2" x 12 3/4"

Pitch across wide water spaces 14 1/4" Working pressures by rules 261 LBS Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 8" x 1 1/4" Length as per rule 2'-1" Distance apart 8" Number and pitch of stays in each 2 off, 4"

Working pressure by rules 228 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 *None fitted*

| | | | | |
|--------------------------------------|--|---------------------------|-------------------------------------|----------------------------------|
| 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 |
| 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 |
| 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: *One propeller, 2 crosshead bolts & nuts, 2 bottom end bolts & nuts, 2 main bearing bolts & nuts, One set of coupling bolts, One set of packing rings for H.P. piston valve, One packing ring for H.P. piston, One set of piston springs for L.P., One set of feed & bilge pump valves, One set of valves for duplex feed pump, One set of valves for air pump & circulating pump, One set of feed check valves, One set of boiler safety valve springs, 35 condenser tubes, 25 boiler tubes, 4 patent tube stoppers, 50 screw ferrules for condenser, 18 main gauge glasses & rings, A set of five bars for one boiler, assorted bolts & nuts, round, flat & square iron.*

The foregoing is a correct description,

As BERGENS MEKANISKE VÆRKSTED Manufacturer.

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|--------------------------------|-----------------------------------|---|------------------------------------|--|-------------|
| Dates of Survey while building | During progress of work in shops— | Jan. 4, 14, 2, 16, 27, 3, 5, 18, 20, 22, 23, 29 & 31. | April 10, 13, 16, 20, 26, 29 & 30. | May 4, 5, 15, 18, 19, 21, 22, 24 & 25. | June 9 & 10 |
| | During erection on board vessel— | June 15, 16, 18, 21, 22, 24, 25, 28, 29 & 30. | July 1, 2 & 3. | | |
| | Total No. of visits | 44. | | | |

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

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|--|------------------------|--------------------------------|-----------------------|----------------------------|-----------------------|----------------------------|---------------------|------------------------|-------------|---------------------|--------------------|
| Dates of Examination of principal parts— | Cylinders | March 5, 20, 22, 16, 26, 4 | Slides | May 24, 25, 9. | Covers | May 19, 24, 9, 10 | Pistons | May 15, 18, 24, 25, 10 | Rods | June 16, 13, 20, 18 | |
| Connecting rods | Sub. April 16 | Crank shaft | March 23, 13, 20, 29 | Thrust shaft | April 16, 20, 22, 10 | Tunnel shafts | May 15, 22, 24, 10 | Screw shaft | June 24, 25 | Propeller | May 18, 24, 21, 34 |
| Stern tube | May 15, 19, 21, 22, 24 | Steam pipes tested | June 22 nd | Engine and boiler seatings | May 15, 24, 15, 16 | Engines holding down bolts | June 15, 21, 25, 29 | | | | |
| Completion of pumping arrangements | July 2 nd | Boilers fixed | June 25 th | Engines tried under steam | June 30 th | | | | | | |
| Main boiler safety valves adjusted | June 30 th | Thickness of adjusting washers | <i>check nuts</i> | | | | | | | | |
| Material of Crank shaft | <i>S. A. Lloyds</i> | Material of Thrust shaft | <i>S. A. Lloyds</i> | | | | | | | | |
| Material of Tunnel shaft | <i>S. A. Lloyds</i> | Material of Screw shaft | <i>S. A. Lloyds</i> | | | | | | | | |
| Material of Steam Pipes | <i>Copper</i> | Test pressure | <i>400 LBS.</i> | | | | | | | | |

General Remarks (State quality of workmanship, opinions as to class, &c. *The workmanship of the above described machinery & boilers is in all respects satisfactory and in my opinion the machinery is eligible to receive notation L.M.C. 7, 09. The engines & boilers are fitted onboard and secured to the vessel to my satisfaction and tried under steam with satisfactory results. The boilers have been tested with hydraulic pressure to 360 LBS and found good & tight. Following marks have been stamped on the front of each boiler: LLOYD'S TEST 360 LBS. 9-6-09. S.A.E. The screw shaft is fitted with Rederwall's protective box and the stern tube provided with proper automatic oiling arrangement. The machinery & boilers are, so far as I have been able to observe, free from defects. The steel used in the construction of shaftings, rods, etc has been tested as required by the Rules.*

It is submitted that this vessel is eligible for THE BROAD. + L.M.C. 7.09

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|--------------------------------|------|-------------------|---------------------------|
| The amount of Entry Fee.. | £ 2 | When applied for. | July 1 st 1909 |
| Special | £ 20 | When received. | July 1909 |
| Donkey Boiler Fee | £ | | |
| Travelling Expenses (if any) £ | | | |

S. H. Tide
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute *FRI. 9 JUL 1909* *FRI. 16 JUL 1909*

Assigned *+ L.M.C. 7.09*

Certificate (if required) to be sent to Surveyor, Bremen

