

REPORT ON MACHINERY.

No. 1194

Date of writing Report 7th July 1913 When handed in at Local Office

Received at London Office THU. JUL. 10. 1913

Port of

No. in Survey held at Stockholm

Date, First Survey 15 Nov. 1912 Last Survey 1 July 1913

Reg. Book.

on the machinery of the motorvessel no. 97

Master

Built at Leith

By whom built Messrs John Crans & Co.

Tons { Gross
Net

Engines made at Stockholm

By whom made J. & C. G. Bolinder's Co. Ltd.,
(Patents Order no. 21281)

When made 1913

Boilers made at

By whom made

when made

Registered Horse Power 80

Owners

Port belonging to

Nom. Horse Power as per Section 28

Is Refrigerating Machinery fitted for cargo purposes

Is Electric Light fitted

ENGINES, &c.—Description of Engines Bolinder's two stroke cycle reversible No. of Cylinders 2 No. of Cranks 2

Dia. of Cylinders 330 ^{mm} Length of Stroke 340 ^{mm} Revs. per minute 325 Dia. of Screw shaft as per rule 125 Material of (none) screw shaft (contracted)

Is the screw shaft fitted with a continuous liner the whole length of the stern tube 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

Dia. of Tunnel shaft as per rule as fitted Dia. of Crank shaft journals as per rule 120 ^{mm} as fitted 125 ^{mm} Dia. of Crank pin 125 Size of Crank webs 164 x 69.5 Dia. of thrust shaft under collars 115 Dia. of screw 1300 ^{mm} Pitch of Screw 910 ^{mm} No. of Blades 3 State whether moveable no Total surface 7000 ^{cm}

No. of Feed pumps Diameter of ditto Stroke Can one be overhauled while the other is at work

No. of Bilge pumps Diameter of ditto Stroke Can one be overhauled while the other is at work

No. of Donkey Engines Sizes of Pumps No. and size of Suctions connected to both Bilge and Donkey pumps In Engine Room In Holds, &c.

No. of Bilge Injections sizes Connected to condenser, or to circulating pump Is a separate Donkey Suction fitted in Engine room & size

Are all the bilge suction pipes fitted with roses Are the roses in Engine room always accessible Are the sluices on Engine room bulkheads always accessible

Are all connections with the sea direct on the skin of the ship Are they Valves or Cocks

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Discharge Pipes above or below the deep water line

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Are the Blow Off Cocks fitted with a spigot and brass covering plate

What pipes are carried through the bunkers How are they protected

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times

Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges

Dates of examination of completion of fitting of Sea Connections of Stern Tube Screw shaft and Propeller

Is the Screw Shaft Tunnel watertight Is it fitted with a watertight door worked from

BOILERS, &c.—(Letter for record) Manufacturers of Steel

Total Heating Surface of Boilers Is Forced Draft fitted No. and Description of Boilers

Working Pressure Tested by hydraulic pressure to Date of test No. of Certificate

Can each boiler be worked separately Area of fire grate in each boiler No. and Description of Safety Valves to each boiler Area of each valve Pressure to which they are adjusted Are they fitted with easing gear

Smallest distance between boilers or uptakes and bunkers or woodwork Mean dia. of boilers Length Material of shell plates

Thickness Range of tensile strength Are the shell plates welded or flanged Descrip. of riveting: cir. seams long. seams Diameter of rivet holes in long. seams Pitch of rivets Lap of plates or width of butt straps

Per centages of strength of longitudinal joint rivets plate Working pressure of shell by rules Size of manhole in shell

Size of compensating ring No. and Description of Furnaces in each boiler Material Outside diameter

Length of plain part top Thickness of plates crown Description of longitudinal joint No. of strengthening rings bottom

Working pressure of furnace by the rules Combustion chamber plates: Material Thickness: Sides Back Top Bottom

Pitch of stays to ditto: Sides Back Top If stays are fitted with nuts or riveted heads Working pressure by rules

Material of stays Diameter at smallest part Area supported by each stay Working pressure by rules End plates in steam space:

Material Thickness Pitch of stays How are stays secured Working pressure by rules Material of stays

Diameter at smallest part Area supported by each stay Working pressure by rules Material of Front plates at bottom

Thickness Material of Lower back plate Thickness Greatest pitch of stays Working pressure of plate by rules

Diameter of tubes Pitch of tubes Material of tube plates Thickness: Front Back Mean pitch of stays

Pitch across wide water spaces Working pressures by rules Girders to Chamber tops: Material Depth and thickness of girder at centre Length as per rule Distance apart Number and pitch of stays in each

Working pressure by rules 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 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	Rivets Plates
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	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:—

The foregoing is a correct description,

Manufacturer.

Dates of Survey while building
 During progress of work in shops -- 15/11, 29/11, 13/12 1912, 4/3, 20/3, 26/4, 7/5, 9/5, 22/5, 9/6, 1/7 1913
 During erection on board vessel ---
 Total No. of visits 12

Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts—Cylinders 9/22/5, 9/6/1913 Slides Covers 9/22/5, 9/6/1913 Pistons 9/22/5, 9/6/1913 Rods
 Connecting rods 26/4, 7/22/5, 9/6/1913 Crank shaft 4/20/3, 22/5/1912 Thrust shaft 15/29/11, 13/12/1913 Tunnel shafts Screw shaft Propeller 1/7/1913
 Stern tube Steam pipes tested Engine and boiler seatings Engines holding down bolts
 Completion of running arrangements Boilers fixed Engines tried under steam 9/6, 14/6 1913
 Main boiler safety valves adjusted Thickness of adjusting washers Lloyd's no. 443
 Material of Crank shaft S.M.S. Identification Mark on Do. 22.5.13 A Material of Thrust shaft S.M.S. Identification Mark on Do. 13.12.12 A Lloyd's no. 451
 Material of Tunnel shafts Identification Marks on Do. 7 Material of Screw shafts Identification Marks on Do. 17
 Material of Steam Pipes Test pressure

General Remarks (State quality of workmanship, opinions as to class, &c. The designs of the crank - & thrust shafts of this type and size of Bolinder Motor have been submitted and approved (See Secretary's letter E 27.12.1912)
 The crank - & thrust shafts have been manufactured at the Sandvikens Steelworks and the connecting rods at the Björneborg Steelworks, all in accordance with the Rules. They have been inspected while being rough-turned and finished and found good and sound. Their materials have been tested by the undersigned and found to fill the Rule requirements.
 The cylinders, of cast iron have been examined and found sound. Thickness of cylinder walls stated to be 22 mm. and of water jackets 13 mm. Both cylinders tested with hydraulic pressure to 529 lbs. per sq. inch, or double the working pressure of 18 atm., and found tight. They have been marked on upper flange of each cylinder. [Lloyd's Test 529 lbs. 9.5.1913 A] Their water jackets have been tested to 50 lbs. and found tight. The Silencer and its water jacket have been tested to 50 lbs. and found tight.
 The motor has been tried in shop under full power in my presence and found to give an effect at normal load and 325 revolutions of 80 BHP. The motor has also been tried with a continuous load at 90 BHP. and with a temporary overload at 101 BHP. and found to work well. The Society's Rules with regard to the details of construction, fitting of valves, lubrication, accessibility, etc., have been adhered to, so far as concerns the motor itself. The remaining requirements of the Rules will have to be attended to at the fitting of the motor in the ship.

I am of opinion, that this motor is of superior material and workmanship, and, as it has been designed and constructed under my special survey, I have respectfully to submit, that it will be eligible to be classed **LMC**, as soon as it has been fitted in ship to the satisfaction of the Society's local surveyors.

The amount of Entry Fee .. £ : : When applied for, 4 July 1913
 Special Donkey Boiler Fee £ 8 0 0
 This is respectfully submitted, that the first entry fee be charged on completion of the fitting in the ship.
 Travelling Expenses (if any) £ : :
 Committee's Minute FRI. OCT. 24. 1913

Assigned

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



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