

REPORT ON MACHINERY.

Received at London Office

FR JUL 14 1913

Date of writing Report 30th June 1913 When handed in at Local Office 10 Port of Stockholm
No. in Survey held at Stockholm Date, First Survey 28th Sept. 1912 Last Survey 9th June 1913
Reg. Book. on the machinery of the twin screw motor vessel (Number of Visits 23)

Master motor Built at Stockholm By whom built N. V. Soenabayasche Tons 186 Gross
Engines made at Stockholm By whom made Maschinenhandel of Haag, Holland. Net 190
J. & C. G. Bolinder's Co. Ltd. when made 1913 When built

Boilers made at Booke By whom made Booke when made 1913
Registered (Horse Power) 320 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 4 No. of Cranks 4

Dia. of Cylinders 420 mm Length of Stroke 480 mm Revs. per minute 225 Dia. of Screw shaft 186 Material of screw shaft S. M. Steel
as per rule 186 as fitted 190

Is the screw shaft fitted with a continuous liner the whole length of the stern tube no liner fitted 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 48 cells

Dia. of Tunnel shaft 161 Dia. of Crank shaft journals 176 Dia. of Crank pin 180 Size of Crank webs 270 Dia. of thrust shaft under collars 175 Dia. of screw 1900 Pitch of Screw 1710 No. of Blades 3 State whether moveable no Total surface 14176 cm²

No. of Feed pumps ? Diameter of ditto ? Stroke ? Can one be overhauled while the other is at work ?
No. of Bilge pumps 2 Diameter of ditto 100 Stroke 50 Can one be overhauled while the other is at work ?

No. of Donkey Engines 1 Sizes of Pumps ? No. and size of Suctions connected to both Bilge and Donkey pumps ?
In Engine Room 3 a 2 1/2 In Holds, &c. ?

No. of Bilge Injections ? 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 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 Yes

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 ?
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 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 Jan 6th 1914 of Stern Tube 6-1-14 Screw shaft and Propeller 6-1-14
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 ? Working pressure of shell by rules ? Size of manhole in shell ?
rivets ? plate ?

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

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

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: ?
Water Co. ? Ton ?

Material ? Thickness ? Pitch of stays ? How are stays secured ? Working pressure by rules ? Material of stays ?
19

Diameter at smallest part ? Area supported by each stay ? Working pressure by rules ? Material of Front plates at bottom ?
28/11

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 ?
high

Pitch across wide water spaces ? Working pressures by rules ? Girders to Chamber tops: Material ? Depth and ?
28/11

thickness of girder at centre ? Length as per rule ? Distance apart ? Number and pitch of stays in each ?
28/11

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 ?
isits ? 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 ?
10

VERTICAL DONKEY BOILER— Manufacturers of Steel

No.	Description		When made	Where fixed
Made at	By whom made			
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		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 -- 28 Sept. 14, 15 Oct., 29 Nov., 13 Dec. 1912, 15 Jan., 27 Jan., 5 & 22 Febr., 4 & 28 Mar.
 During erection on board vessel --- 3, 4, 14, 17, 23 & 30 April, 7, 8, 9 & 22 May, 2 & 9 June 1913
 Total No. of visits 23

Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts—Cylinders 4 & 28, 3, 4, 7, 1913 Slides Covers 4 & 28, 1913 Pistons 4 & 28, 1913 Rods 15, 13, 1913
 Connecting rods 15, 13, 1912 Crank shaft 29, 1912 Thrust shaft 27, 1, 5, 22, 1913 Tunnel shafts 30, 4, 9, 3, 2, 1913 Screw shaft 4, 14, 17 & 23, 1913 Propeller 2, 1913
 Stern tube 2, 6, 1913 Steam pipes tested 15, 5 & 22, 1913 Engine and boiler seatings 30, 7, 5 & 2, 1913 Engines holding down bolts 7, 8 & 22, 9, 1913
 Completion of pumping arrangements Boilers fixed Engines tried under steam 3 April 1913
 Main boiler safety valves adjusted Thickness of adjusting washers Lloyd's no. 411
 Material of Crank shaft S.M.S. Identification Mark on Do. 22.2.13A. 18 Material of Thrust shaft S.M.S. Identification Mark on Do. 22.2.13A. 18
 Material of Tunnel shafts S.M.S. Identification Marks on Do. 2.6.13A. 35 Material of Screw shafts S.M.S. Identification Marks on Do. 8.5.13A. 18
 Material of Steam Pipes Test pressure

General Remarks (State quality of workmanship, opinions as to class, &c. The designs of the crank-thrust, intermediate and propeller shafts, the connecting rods and the clutch gearing of this type and size of boiler motor have been submitted and approved (See Secretary's letters E. 31.10.1911, 24.1.1912 & 13.9.1912). These shafts (except the intermediate shafts) and the connecting rods, have all been manufactured at the Sandviken Steelworks. The intermediate shafts have been manufactured at the Björneborg Steelworks and all in accordance with the Rules. The shafts have been examined while being rough-turned and finished and found good and sound. The materials have been tested by the undersigned and found to be in accordance with the Rule requirements.

The cylinders, of cast iron, have been examined in- and outside and found sound. Thickness of cylinder walls is stated to be 30 mm. and of waterjackets 16 mm. Cylinders tested with hydraulic pressure to 5 lbs. per sq. in. or double the working pressure of 18 atm., and found tight. They have been marked on upper flanges of each cylinder Lloyd's Test 4.3.13A. Their waterjackets have been tested to 50 lbs. and found tight.

The pistons and its waterjacket 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 225 revolutions of 320 B.H.P.

The Bilge pumps, of 100 mm. diam. x 50 mm. stroke, are in accordance with the approved design in this instance (Secr.'s letter E. 28.10.1912).

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 on 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 **L.M.C.**, as soon as it has been fitted on ship to the satisfaction of the Society's local Surveyor.

It is respectfully submitted, that the first entry fee be charged on completion of the fitting in ship.

The amount of Entry Fee	£	:	:	When applied for,
Special	£	12	0	20 June 1913
Donkey Boiler Fee	£	:	:	When received,
Travelling Expenses (if any)	£	:	:	June 1913

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

Committee's Minute TUE. MAR. 31. 1914
 Assigned

