

Rpt. 4.

REPORT ON MACHINERY.

Report No 80053
No. 1495

Received at London Office 10 JAN. 1916

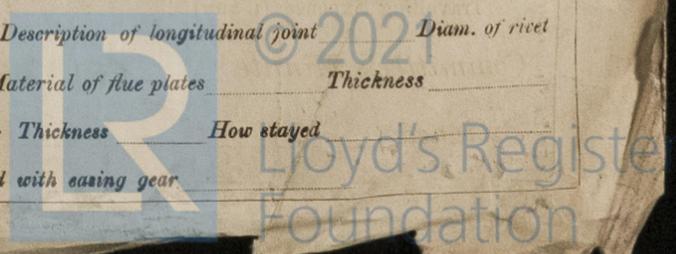
Date of writing Report 3rd Dec. 1915 When handed in at Local Office 19 Port of Stockholm
 No. in Survey held at Stockholm Date, First Survey 9th Feb 15 Last Survey 22nd Dec 1915
 Req. Book. on the Remise Smeeth's 1270 "Lutona" (Number of Visits 15)
 Master Built at _____ By whom built _____ Tonnage } Gross }
 Engines made at Stockholm By whom made Messrs J. & C. G. Bolinder's Co., Ltd. when made } Net }
 Boilers made at _____ By whom made _____ when made }
 Registered Horse Power 160 Owners _____ Port belonging to _____
 Nom. Hors. Power as per Section 28 _____ Is Refrigerating Machinery fitted for cargo purposes _____ Is Electric Light fitted _____

ENGINES, &c.—Description of Engines Bolinder, two stroke cycle reversible, with air injection No. of Cylinders 2 No. of Cranks 2
 Dia. of Cylinders 420^m Length of Stroke 480^m Revs. per minute 225 Dia. of Screw shaft 158^m as per rule _____ Material of screw shaft _____
 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 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 150^m as per rule _____ Dia. of Crank shaft journals 160^m as per rule _____ Dia. of Crank pin 174^m Size of Crank webs 240^m Dia. of thrust shaft under collars _____
 Dia. of screw _____ Pitch of Screw _____ No. of Blades _____ State whether moveable _____ Total surface _____
 No. of cooling pumps 1 Diameter of ditto 100^m Stroke 52^m Can one be overhauled while the other is at work _____
 No. of Bilge pumps 1 Diameter of ditto 100^m Stroke 100^m 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 _____ 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 _____ Thickness of plates _____ Description of longitudinal joint _____ No. of strengthening rings _____
 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 _____

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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 Rivets
 Dia. of rivet holes Whether punched or drilled Pitch of rivets Lap of plating Per centage of strength of joint 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: During progress of work in shops -- 9.11.24 & 27/2; 9/3; 29/4; 21/7; 4x5/8; 2.8.9.13 & 14/10; 22/12 1915
 During erection on board vessel --
 building
 Total No. of visits 15
 Is the approved plan of main boiler forwarded

Dates of Examination of principal parts—Cylinders 2x8/10 1915
 Connecting rods 2x8 9/10 1915
 Crank shafts 2x8 9/10 1915
 Thrust shaft 2x8 9/10 1915
 Tunnel shafts
 Screw shaft
 Engines holding down
 Engines tried in shop
 Engines tried under steam

Completion of pumping arrangements
 2 Starting air receivers 15.12/10 & 22/12 1915
 Main boiler safety valves adjusted
 Boilers fixed
 Injection air receiver 4/8 & 22/12 1915
 Thickness of adjusting washers
 Material of Crank shaft S.M. Steel Identification Mark on Do. 2.10.15
 Material of Thrust shaft S.M. Steel Identification M
 Material of Tunnel shafts Identification Marks on Do.
 Material of Screw shafts Identification M
 Test pressure 60 Atm.
 50 lbs. per sq. inch.

General Remarks (State quality of workmanship, opinions as to class, &c. This machinery is a duplicate dealt with in Skm. Report No. 1446— see appended sheet.)

The amount of Entry Fee £
 Survey in shop only, as per special arrangement 30/0
 Special mark with test 6.0
 Donkey Boiler Fee £
 Travelling Expenses (if any) £
 Committee's Minute FRI 13 JUL 1917
 Assigned

When applied for
 When received
 FRI 28 DEC 1917
 TUE 9 JUL 1918
 FRI NOV 28 1919
 FRI NOV 17 1922
 FRI OCT 28 1917
 FRI JUL 30 1920
 FRI APR 30 1920

BOLINDER 160 B. H. P. motor, Cyl. Nos 10714/15

The designs of the crank & thrust shafts and the connecting rods of this type and size of Bolinder Motor have been submitted and approved (See Secretary's letters L 5.3.13 & 9.4.14).

These shafts and connecting rods have been manufactured at the Sandviken and Björneborg Steel Works in accordance with the Rules. They have been inspected while being roughturned 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 cylinderwalls stated to be 30 mm. and of waterjackets 15 mm. Cylinders tested with hydraulic pressure to 529 lbs per sq. inch or twice the working pressure of 18 Atm. and found tight. They have been marked on upper flange of each cylinder: Lloyd's Test 529 lbs 8.10.15 A. Their waterjackets have been tested to 50 lbs and found tight.

The compressor cylinders (2 stage) and their waterjackets have been tested: H. P. cyl. to 60 Atm., L. P. cyl. to 16 Atm., or twice the resp. working pressures, and waterjackets to 50 lbs and all found tight.

The starting air receivers, of low tensile S. M. S. plates, lapwelded by the ordinary "water gas" method, are manufactured at the Avesta Steel Works, who have also manufactured and rolled the steel. Length of receiver 1640 mm., outside diam. 300 mm., platethickness 6 mm. Plan submitted and approved (See Secretary's letter E.24.7.1914). The steel material has been tested by the undersigned and found good, and the receiver been tested by me with hydraulic pressure to 24 Atm. or twice the working pressure and found sound and tight. It has been stamped as follows:

Lloyd's Test 24 Atm.
 Working Pr. 12 Atm.
 No. 2040 Skm. 22.12.15 A
 4 2041

The injection air receiver, of solid drawn S. M. S. tube, is manufactured at the Avesta Steel Works from tube, manufactured at the Storfors Steel Works. Length of receiver 1335 mm., outside diam. 108 mm., platethickness 4.5 mm. Plan submitted and approved (See Secretary's letter E.24.7.1914). The material has been tested by the undersigned and found good, and the receiver tested by me with hydraulic pressure to 60 Atm. or twice the working pressure and found sound and tight. It has been stamped as follows:

Lloyd's Test 60 Atm.
 Working Pr. 30 Atm.
 No. 2042 Skm. 22.12.15 A

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 160 B. H. P. It has also been tried with a continuous overload at 176 B. H. P. 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 will have to be attended to at the fitting of the motor in ship, if a classed vessel.

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 **T.M.C.** and that a special certificate, as referred to in Secretary's letter E, dated 3rd March 1914, be issued and forwarded to this office.

REMAIN
 O. Eriksson
 Engineer Surveyor to Lloyd's Register of Shipping.