

Rpt. 4.

REPORT ON MACHINERY.

Chicago No. 19A.
No. 4664

REC'D NEW YORK

October 6, 1917

Received at London Office

THU. 5 APR 1917

Date of writing Report 19th March 1917 When handed in at Local Office 4th Oct 1917 Port of Stockholm & Chicago, Ill.
No. in Survey held at Stockholm & Manitowish Date, First Survey 25th August 1916 Last Survey 7th March 1917
Reg. Book. on the T. S. MOTOR VESSEL "ADA" PORT ENGINES. (Number of Visits 15) (Gross 2124) (Net 1667) (When built 1917-9)

Master Built at Manitowish, Wis. By whom built Manitowish S.B. Dry Dock Co. No. 80
Engines made at Stockholm By whom made Messrs J. & C. Bolinder's Co. Ltd. (Eng. No. 12448) (America over No. 126) when made 1917.
Boilers made at By whom made when made
Registered Horse Power 320 Owners United States Shipping Board, Imagine Fleet Corp. Port belonging to Not stated.
Nom. Horse Power as per Section 28 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Bolinder two stroke cycle reversible, with No. of Cylinders 4 No. of Cranks 4
Dia. of Cylinders 420¹/₂ 16¹/₂" dia. fair injection Length of Stroke 480¹/₂ 18³/₈" Revs. per minute 225 Dia. of Screw shaft as per rule 7¹/₂" Material of screw shaft Steel
Is the screw shaft fitted with a continuous liner the whole length of the stern tube Yes 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 Length of stern bush 2'-10"
Dia. of Tunnel shaft as per rule Dia. of Crank shaft journals as per rule Dia. of Crank pin 180¹/₂" Size of Crank webs 104¹/₂" Dia. of thrust shaft under
collars 175¹/₂" Dia. of screw 6'-6" Pitch of Screw 5'-3" No. of Blades 3 State whether moveable No Total surface 15.5 sq. ft.
No. of Fred pumps 2 Diameter of ditto 100¹/₂" Stroke 50¹/₂" Can one be overhauled while the other is at work Yes
No. of Bilge pumps 1 Diameter of ditto 110¹/₂" Stroke 130¹/₂" Can one be overhauled while the other is at work
No. of Donkey Engines 2 Sizes of Pumps 7¹/₂" x 5" x 6" 7¹/₂" x 8" x 10" No. and size of Suctions connected to both Bilge and Donkey pumps
In Engine Room 1 - 3" to well 2 - 3" to Bilges (Ballast pumps) In Holds, &c. 3" - Port & Starboard Found. Hold & after Hold

No. of Bilge Injections sizes Connected to condenser, or to circulating pump Is a separate Donkey Suction fitted in Engine room & size Portable 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
Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Inlet Valves Blow-off cock
Are they fired 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 bunkers No 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
Is the Screw Shaft Tunnel watertight No Tunnel Is it fitted with a watertight door worked from

OILERS, &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
Forecastle 28 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 Working pressure of shell by rules Size of manhole in shell
is to be given as 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 Thickness of plates 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 End plates in steam space:
C.D.B. Material of stays Area at smallest part Area supported by each stay Working pressure by rules Material of stays
Length. Water Capacity Material Thickness Pitch of stays How are stays secured Working pressure by rules Material of Front plates at bottom
Feet. Tons Area at smallest part Area supported by each stay Working pressure by rules Working pressure of plate by rules
15 30 Thickness Material of Lower back plate Thickness Greatest pitch of stays Mean pitch of stays
20 150 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 Steam dome: description of joint to shell % of strength of joint
Diameter Thickness of shell plates Material Description of longitudinal joint Diam. of rivet holes
Pitch of rivets Working pressure of shell by rules Crown plates Thickness How stayed
SUPERHEATER. Type Date of Approval of Plan Tested by Hydraulic Pressure to
Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler
Date of Test Pressure to which each is adjusted Is Easing Gear fitted
meter of Safety Valve

W521 10208 Register Foundation

IS A DONKEY BOILER FITTED?

Yes

If so, is a report now forwarded?

Yes

SPARE GEAR. State the articles supplied:—

See continuation sheet.

The foregoing is a correct description,

SHIP BUILDING CO.

Charles West
VICE PRESIDENT & MANAGER

Manufacturer.

Dates of Survey while building
During progress of work in shops -- 25/8; 6, 11, 16, 25/9; 27/10; 2, 11/11; 6, 7/12 1916. 15, 21, 22, 24/2; 7/3 1917.
During erection on board vessel -- Dec. 13, Mar. 28, Apr. 11, 21, May 19, June 2, July 2, 12, 14, Aug. 7, 20, Sept. 1, 10, 14, 15.
Total No. of visits 15 + 15 = 30.

Is the approved plan of main boiler forwarded herewith? ☒

Dates of Examination of principal parts -- Cylinders 15/2, 21/2 1917. Slides 15/2, 21/2 1917. Covers 15/2, 21/2 1917. Pistons 15/2, 21/2 1917. Rods 15, 21, 22, 24/2; 7/3 1917.
Connecting rods 15, 21, 22, 24/2; 7/3 1917. Crank shaft 15, 21, 22, 24/2; 7/3 1917. Thrust shaft 15, 21, 22, 24/2; 7/3 1917. Tunnel shafts 15, 21, 22, 24/2; 7/3 1917. Screw shaft 11-4-7. Propeller 19-5-17.
Stern tube 28-3-17. Steam pipes tested 15-9-17. Engine and boiler seatings 19-5-17. Engines holding down bolts 2-7-17.
Completion of pumping arrangements 15-9-17. Boilers fixed 15-9-17. Engines tried in shop under steam 15-2-1917. TRIAL TRIP 1-9-17.
Completion of fitting sea connections 21-4-17. Stern tube 21-4-17. Screw shaft and propeller 2-6-17.
Main boiler safety valves adjusted 22-2-1917. Thickness of adjusting washers 22-2-1917.
Material of Crank shaft P.M. Steel Identification Mark on Do. Lloyd's No. 2480. Material of Thrust shaft P.M. Steel Identification Mark on Do. Lloyd's No. 2510. Material of Tunnel shafts Identification Marks on Do. Material of Screw shafts S. Identification Marks on Do. Lloyd's No. 11-4-7. H.B.M.
Material of Steam Pipes solid drawn copper. Test pressure 60 lb. per sq. inch. 30 lb. per sq. inch. Is the flash point of the oil to be used over 150°F. Yes.

Have the requirements of Section 49 of the Rules been complied with? Yes.

Is this machinery duplicate of a previous case? Yes.

If so, state name of vessel. (See plan report No. 1577).

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

Material of compressor crank shaft: P.M. Steel. Identification mark on S: Lloyd's No. 2510. SKM. 21-2-17.

It is submitted that
this vessel is eligible for
THE RECORD. + LMC 9.17.

Oil Engines. 2SC.SA. 8 Cy 16 1/2" - 18 3/8". D.B 150 lb.

J. & C.G. Bolinders Co. Ltd.

(Annual Survey)

H.R. McCalland, Chicago.

The amount of Entry Fee ... £ \$5.00 : When applied for,
Survey 27.50 :
Special Survey in ship ... £ 11 : 6 : 2 : 10.3 : 1917
Donkey Boiler Fee ... £ See Rpt. No. 20 : 4-10-17, Chicago.
Travelling Expenses (if any) £ \$29.00 : When received, 21-6-2 1917.
15/11/17

Committee's Minute

New York UCL 9 1917

Assigned

See Chi. Rpt. No. 18
+ Lmb. 9.17

Engineer Surveyor to Lloyd's Register of Shipping.

Assisted by Mr. V. Schreil



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Lloyd's Register
Foundation

WED. OCT. 31 1917.

BOLINDER 320 B. H. P. motor, Cyl. Nos *12448/51*

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 letter *E. 3-10-11. 1.7-14. 10.1.16.*).

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 21.2.17 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 esp. working pressures, and waterjackets to 50 lbs and all found tight.

The starting air receiver, of low tensile S. M. S. plates, lapwelded by the ordinary »water gas» method, is manufactured at the Avesta Steel Works, who have also manufactured and rolled the steel. Length of receiver *2015* mm.; outside diam. *450* mm., platethickness *7* mm. Plan submitted and approved (See Secretary's letter *E. 8-3-16*). The steel material has been tested by the undersigned and found good, and the receiver been tested by me with hydraulic pressure to *30* Atm. or twice the working pressure and found sound and tight. It has been stamped as follows:

Lloyd's Test	<i>30</i> Atm.
Working Pr.	<i>15</i> Atm.
No. <i>2099</i>	Skm. <i>22.2.17 A</i>

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 *1300* mm., outside diam. *152* mm., platethickness *4* mm. Plan submitted and approved (See Secretary's letter *E. 2-2-15*). 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	<i>60</i> Atm.
Working Pr.	<i>30</i> Atm.
No. <i>2000</i>	Skm. <i>22.2.17 A</i>

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. It has also been tried with a continuous overload at *352* 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 *+LMC*, as soon as it has been fitted in a classed vessel to the satisfaction of the Society's Surveyors.

A. Hakson
Engineer Surveyor to Lloyd's Register of Shipping.

The above engines have been fitted on board in a satisfactory manner. They were tried under full power, in presence of the Undersigned, at a trial trip on Lake Michigan on Sept. 1st. 1917 and worked satisfactorily. At an average motor speed of *215* revs. per min. on Port & Starboard Motors, the speed of the vessel was found to be *8.79* knots per hour. The average revolutions of the Motors at full astern speed were *180* per min. The lowest motor speed for manoeuvring was *105/110* revs. per min. The mean draft during the trial trip was *8'-9"*. In the opinion of the Undersigned, this vessel is eligible for the notation *+L.M.C.* in the Register Book, with date of entry *9.17.*

W. R. McClelland. Chicago.