

## REPORT ON MACHINERY.

No. 2685

Received at London Office

MON. DEC. 29. 1913

Date of writing Report 24<sup>th</sup> December 1913When handed in at Local Office 24<sup>th</sup> December 1913

Port of

Gothenburg

No. in Survey held at

Oscarshamn

Date, First Survey 27<sup>th</sup> AprilLast Survey 24<sup>th</sup> December 1913

Reg. Book

29 on the Steel s.s. "Arvar"

(Number of Visits 57)

Gross 1271  
Tons Net 632

Master J. A. Forlund Built at Oscarshamn By whom built Oscarsh. Mek. V. &amp; Skeppsd. Aktiebol. When built 1913

Engines made at Oscarshamn By whom made Oscarsh. Mek. V. &amp; Skeppsd. Aktiebol. when made 1913

Boilers made at Oscarshamn By whom made Oscarsh. Mek. V. &amp; Skeppsd. Aktiebol. when made 1913

Registered Horse Power Owners Sugg. Aktiebol. Göteborg Handels- och Sjöfartssk. Port belonging to Gothenburg

Nom. Horse Power as per Section 28 204 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

**ENGINES, &c.**—Description of Engines Triple expansion No. of Cylinders 3 No. of Cranks 3  
 Dia. of Cylinders 19" 31 1/2" x 51 1/2" Length of Stroke 33" Revs. per minute 90 Dia. of Screw shaft as per rule 10 5/16" Material of screw shaft Steel  
 Is the screw shaft fitted with a continuous liner the whole length of the stern tube No liner fitted 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 Cedar walls galant protecting box fitted Length of stern bush 43"  
 Dia. of Tunnel shaft as per rule 9 7/16" Dia. of Crank shaft journals as per rule 9 3/32" Dia. of Crank pin 10 5/8" Size of Crank webs 11 1/2" x 7 1/2" Dia. of thrust shaft under  
 collars 10 7/8" Dia. of screw 12 1/2" Pitch of Screw 14'-0" No. of Blades 4 State whether moveable No Total surface 58 sq. feet  
 No. of Feed pumps 2 Diameter of ditto 3 7/32" Stroke 15" Can one be overhauled while the other is at work Yes  
 No. of Bilge pumps 2 Diameter of ditto 3 7/32" Stroke 15" Can one be overhauled while the other is at work Yes  
 No. of Donkey Engines 2 Sizes of Pumps 8" x 8" x 7" x 5 1/4" x 3 1/2" x 5" No. and size of Suctions connected to both Bilge and Donkey pumps  
 In Engine Room 3 = 2 - 3" dia. + 1 - 2 1/4" dia. In Holds, &c. 3 = 2 - 3" dia. in fore hold + 1 - 3" dia.  
 No. of Bilge Injections 1 sizes 5" Connected to condenser, or to circulating pump, &c. as a separate Donkey Suction fitted in Engine room & size Yes 2 3/4"  
 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  
 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 bunkers suction pipes for hold How are they protected By strong efficient wood casing  
 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 8/4/13 of Stern Tube 1/11/13 Screw shaft and Propeller 8/11/13  
 Is the Screw Shaft Tunnel watertight Yes (checked) Is it fitted with a watertight door Yes worked from Upper deck  
**BOILERS, &c.**—(Letter for record S) Manufacturers of Steel William Beardmore & Co., Ltd.  
 Total Heating Surface of Boilers 3636 sq. ft. Is Forced Draft fitted No No. and Description of Boilers 2 cylindrical multifubular  
 Working Pressure 185 lbs. per sq. in. Tested by hydraulic pressure to 370 lbs. per sq. in. Date of test 30 Oct. 1913 No. of Certificate 59  
 Can each boiler be worked separately Yes Area of fire grate in each boiler 43.5 sq. ft. No. and Description of Safety Valves to  
 each boiler Two direct spring loaded Area of each valve 12.56 sq. in. Pressure to which they are adjusted 190 lbs. per sq. in. Are they fitted with easing gear Yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 10 1/2" Mean dia. of boilers 12'-10 1/2" Length 10'-9" Material of shell plates Steel  
 Thickness 1 3/16" Range of tensile strength 27-29.3 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams double  
 Long. seams riveted Diameter of rivet holes in long. seams 1 3/32" Pitch of rivets 7 1/32" x 3 3/4" Lap of plates or width of butt straps 16 1/2" x 15 1/2"  
 Percentages of strength of longitudinal joint rivets 82 plate 84 Working pressure of shell by rules 198 lbs Size of manhole in shell 11 3/16" x 15 3/4"  
 Size of compensating ring 5 29/32" x 1 3/16" No. and Description of Furnaces in each boiler 3 corrugated Material Steel Outside diameter 3'-1 1/4"  
 Length of plain part top 7'-7 1/8" Thickness of plates 7/16" Description of longitudinal joint Welded No. of strengthening rings 4  
 Working pressure of furnace by the rules 236 lbs Combustion chamber plates: Material Steel Thickness: Sides 19/32" Back 19/32" Top 19/32" Bottom 7/8"  
 Pitch of stays to ditto: Sides 6" x 6" Back 6" x 6" Top 6" x 7 1/2" If stays are fitted with nuts or riveted heads on margin stays Working pressure by rules 265 lbs  
 Material of stays Steel Diameter at smallest part 1 1/4" Area supported by each stay 36 sq. in. Working pressure by rules 275 lbs End plates in steam space:  
 Material Steel Thickness 13/16" x 29/32" Pitch of stays 15" x 13" How are stays secured riveted on margin stays Working pressure by rules 189 lbs Material of stays Steel  
 Diameter at smallest part 2 1/2" Area supported by each stay 195 sq. in. Working pressure by rules 261 lbs Material of Front plates at bottom Steel  
 Thickness 7/16" Material of Lower back plate Steel Thickness 25/32" Greatest pitch of stays to per plan Working pressure of plate by rules  
 Diameter of tubes 3 1/2" Pitch of tubes 4 3/4" x 4 3/4" Material of tube plates Steel Thickness: Front 15/16" Back 25/32" Mean pitch of stays 9 1/2"  
 Pitch across wide water spaces 13 3/4" Working pressures by rules 190 lbs Girders to Chamber tops: Material Steel Depth and  
 thickness of girder at centre 7 15/32" x 28 1/2" Length as per rule 26' x Distance apart 7 1/2" Number and pitch of stays in each 3-6"  
 Working pressure by rules 235 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

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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		
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:—2 coum. rod top and bolts and nuts. 2 coum. rod bottom and bolts and nuts. 2 main bearing bolts. 1 set of coupling bolts. 1 propeller. 1 set of feed and bilge pump valves. 1 set of piston springs. Main boiler check valves. 1 ballast. 1 donkey pump valve. 1 air pump rod. 1 safety valve spring. 2 air pump valves. 2 circulating pump valves. 12 condenser tubes. 1 ordinary boiler tubes. 2 stay tubes. A quantity of assorted bolts and nuts. Iron of various sizes.

The foregoing is a correct description,  
**OSCARSKA VERKSTADS  
 OCH SKEPPSDOCKAS AKTIEBOLAG.**

Manufacturer.

**Surveyor** April 27 & 28. May 15, 16, 29, 29, 30 & 31. June 4, 5, 6, 14, 25 & 27. July 7, 17, 18, 19, 20 & 21. Aug. 6, 20, 20 & 21.  
 Dates of progress of work in shops ————  
 of Survey while building ————  
 During erection on board vessel ————  
 Total No. of visits 57

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

Dates of Examination of principal parts—Cylinders 27, 28, 17, 19, 21, 13 Slides 7/10 & 9/11 13 Covers 30/8 & 8/11 13 Pistons 20/9 & 7/10 Rods 27/6, 17/6, 6/10 13  
 Connecting rods 27/6, 17/6, 6/10 13 Crank shaft 6/9/13 Thrust shaft 24/9/13 Tunnel shafts 31/10/13 Screw shaft 7/10/13 Propeller 30/10 & 4/11 13  
 Stern tube 20/8/13 Steam pipes tested 28/11/13 Engine and boiler seatings 6/9/13 Engines holding down bolts 28/11/13  
 Completion of pumping arrangements 16/12/13 Boilers fixed 28/11/13 Engines tried under steam 17/12/13  
 Main boiler safety valves adjusted 17/12/13 Thickness of adjusting washers None fitted  
 Material of Crank shaft Steel Identification Mark on Do. 6.2.13 V.C.B. Material of Thrust shaft Steel Identification Mark on Do. 27.9.13 V.C.B.  
 Material of Tunnel shafts Steel Identification Marks on Do. 31.10.13 V.C.B. Material of Screw shafts Steel Identification Marks on Do. 7.10.13 V.C.B.  
 Material of Steam Pipes Copper Test pressure 370 lbs per square inch

## General Remarks

(State quality of workmanship, opinions as to class, &c. This machinery has been built under special survey, and all the requirements of the Rules have been complied with.

The shafting as per forging reports attached.

The boilers have been built in accordance with the approved plan.

The workmanship is good.

The machinery of this vessel is eligible in my opinion to be classed in the Register Book of this Society with the notation of **LMC 12, 13**, being in a good and safe working condition at a working pressure of 185 lbs per sq. inch.

The amount of Entry Fee .. £ 36.44. When applied for.  
 Special .. £ 550.27. 22nd Dec. 13.  
 Donkey Boiler Fee .. £ : : When received.  
 Travelling Expenses (if any) £ 200.00 31/1/14

Committee's Minute

Assigned

TUE. JAN. 6—1914

+ LMC 12. 13.

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



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MACHINERY CERTIFICATE  
 WRITTEN.

Certificate (if required) to be sent to Surveyors' Office, Greenwich.

(The Surveyor is requested not to write on or below the space for Committee's Minute.)