

## REPORT ON MACHINERY.

No. 6116.

Date of writing Report 11<sup>th</sup> April 1921 When handed in at Local Office 19 Port of Copenhagen  
 No. in Survey held at Copenhagen Date, First Survey 28<sup>th</sup> Novr. 1917 Last Survey 7<sup>th</sup> April 1921  
 Reg. Book. 7115 on the Steel Sc. Sr. "Avanti" (Yard No. 162) (Number of Visits 35)  
 Master J. M. Petersen Built at Frederikshavn By whom built Akt. Frederikshavns Køft og Flyddsk Tons Gross 1570  
No. 216 Engines made at Elsinore By whom made Akt. Helsingørsk Jernstøb og Maskinbyggeri when made 1917-20 Net 897  
 Boilers made at Elsinore By whom made Akt. Helsingørsk Jernstøb og Maskinbyggeri when made 1917-20  
 Registered Horse Power 169 NHP Owners Akt. Det Forenede Dampskibs Selskab Port belonging to Copenhagen  
 Nom. Horse Power as per Section 29 169 N.H.P. Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Vertical Triple expansion No. of Cylinders 3 No. of Cranks 3  
 Dia. of Cylinders 18" x 30" x 50" Length of Stroke 36" Revs. per minute 80 Dia. of Screw shaft as per rule 11.319" Material of S.M.I. Steel  
as fitted 11.38" screw shaft  
 Is the screw shaft fitted with a continuous liner the whole length of the stern tube No liner Is the after end of the liner made water tight  
Ederwall's lubricating in the propeller boss filled 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 3' 9 1/2"  
 Dia. of Tunnel shaft as per rule 9.37" Dia. of Crank shaft journals as per rule 9.86" Dia. of Crank pin 9 7/8" Size of Crank webs 15 1/2" x 6 1/8" Dia. of thrust shaft under  
 collars 9 7/8" Dia. of screw 13-6" Pitch of Screw 13-6" No. of Blades 4 State whether moveable No Total surface 58 sq.  
 No. of Feed pumps 2 off Diameter of ditto 3" Stroke 18" Can one be overhauled while the other is at work yes  
 No. of Bilge pumps 2 off Diameter of ditto 3 3/4" Stroke 18" Can one be overhauled while the other is at work yes One 10 Tons Evaporator  
 No. of Donkey Engines 2 off duplex Sizes of Pumps Shawn Epl. 150 1/2" Water Cpl. 100 1/2" Stroke 150 1/2"  
and Ballast Pump In Engine Room 4 off 2 1/4" diam. 152 1/2" 108 1/2" 250 1/2" 200 1/2" 250 1/2" No. and size of Suctions connected to both Bilge and Donkey pumps  
one 2 1/4" diam. In fore peak tank and after peak tank one off in each a 3" diam. In double bottom tank 2 1/2" x 3" diam. each arranged as per approved plan.  
 No. of Bilge Injections 1 off sizes 5" Connected to condenser, or to circulating pump Is a separate Donkey Suction fitted in Engine room & size 1 off 3" diam.  
 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 yes  
 Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks Valves, except the boiler blow off cock.  
 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 none 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 yes Is it fitted with a watertight door yes worked from upper deck

BOILERS, &c.—(Letter for record S.) Manufacturers of Steel Plate & Tube Co. (M. & L.) - Stays: - Frothingham Iron & Steel Works, Southampton.  
 Rivets: - H. & C. Bros. Copenhagen.  
 Total Heating Surface of Boilers 2652 Is Forced Draft fitted No No. and Description of Boilers 2 off Single ended return tubular  
 Working Pressure 185 lbs. per sq. in. Tested by hydraulic pressure to 328 lbs. per sq. in. Date of test 23<sup>rd</sup> Sept. 1920 No. of Certificate 412 x 413  
 Can each boiler be worked separately yes Area of fire grate in each boiler 31.66 sq. ft. No. and Description of Safety Valves to  
 each boiler 2 off direct spring loaded Area of each valve 3.976 sq. in. Pressure to which they are adjusted 185 lbs. per sq. in. Are they fitted with easing gear yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 12-5 1/16" Length 10'-1" Material of shell plates S.M. Steel  
 Thickness 1 1/16" Range of tensile strength 28/32 Tons Are the shell plates welded or flanged No. Descrip. of riveting: cir. seams double riveted  
long. seams double riveted Diameter of rivet holes in long. seams 1 1/16" Pitch of rivets 6 5/8" Lap of plates or width of butt straps 15 1/4"  
 Per centages of strength of longitudinal joint 93.68 Working pressure of shell by rules 185.5 lbs. per sq. in. Size of manhole in shell 12" x 16"  
 Size of compensating ring 29 1/2" x 28 1/4" No. and Description of Furnaces in each boiler 2 off, Deighton's Material S.M. Steel Outside diameter 3' 8"  
 Length of plain part top 9' 1/2" bottom 9' 1/2" Thickness of plates crown 9/16" bottom 9/16" Description of longitudinal joint welded No. of strengthening rings ✓  
 Working pressure of furnace by the rules 200 lbs. Combustion chamber plates: Material S.M. Steel Thickness: Sides 5/8" + 1/32" Back 9/16" Top 5/8" + 1/32" Bottom 3/4"  
 Pitch of stays to ditto: Sides 7 1/4" x 9" Back 7 1/4" x 7 3/4" Top 8 1/2" x 7 3/4" If stays are fitted with nuts or riveted heads Nuts inside & outside Working pressure by rules Back 194 lbs.  
 Material of stays S.M. Steel Area at smallest part 1.50 sq. in. Area supported by each stay Back 56.17 sq. in. Working pressure by rules Back 218 lbs. End plates in steam space:  
 Material S.M. Steel Thickness 1 1/16" + 1/32" Pitch of stays 18 1/4" x 19" How are stays secured washed outside Working pressure by rules 199 lbs. Material of stays S.M. Steel  
 Area at smallest part 6.533 sq. in. Area supported by each stay 310.25 sq. in. Working pressure by rules 218.2 lbs. Material of Front plates at bottom S.M. Steel  
 Thickness 1 1/16" + 1/32" Material of Lower back plate S.M. Steel Thickness 1 1/16" + 1/32" Greatest pitch of stays 14' 7 3/4" Working pressure of plate by rules 192.2 lbs.  
 Diameter of tubes 3 1/4" Pitch of tubes 4 3/4" x 4 1/2" Material of tube plates S.M. Steel Thickness: Front 1 1/16" + 1/32" Back 7/8" + 1/32" Mean pitch of stays 10.82"  
 Pitch across wide water spaces 14 1/4" Working pressures by rules 189 lbs. Girders to Chamber tops: Material S.M. Steel Depth and  
 thickness of girder at centre 7 1/4" x 3 1/4" x 2 Length as per rule 2'-2 5/16" Distance apart 9 3/16" Number and pitch of stays in each 2 off 8 1/2"  
 Working pressure by rules 185 lbs. 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 Schmidt's Patent Date of Approval of Plan 28<sup>th</sup> February 1918 Tested by Hydraulic Pressure to 555 lbs. per sq. in.  
 Date of Test 7<sup>th</sup> May 1917 Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler yes  
 Diameter of Safety Valve 2" Pressure to which each is adjusted 185 lbs. per sq. in. Is Easing Gear fitted yes



IS A DONKEY BOILER FITTED?

No.

If so, is a report now forwarded?

**SPARE GEAR.** State the articles supplied:— One cast iron propeller. One set of coupling bolt and nuts. 2 connecting rod top end bolts and nuts. 2 connecting rod bottom end bolts and nuts. 2 main bearing bolts and nuts. 1 pair of connecting rod brasses. 1 pair of crosshead brass. One set of piston packing rings. 6 piston junkering screws. 1 set of air pump valves. 1 set bilge pump valves. — 2 valves for the feed check valves on boilers. — 2 springs for boiler safety valves. 2 % condenser tubes and screw ferrules. 5% boiler tubes. 6 water gauge glasses. 1/2 set of fire bars. 3 boiler tube stoppers. — 12 iron plugs for the superheaters. 200 assorted bolts and nuts. — Iron of various sizes.

The foregoing is a correct description,

PP ACTIES KABET  
HELSINGBORG JERNVÄRK AB  
Helsingborg, Sweden

Manufacturer.

Dates of Survey while building  
During progress of work in shops — 28/11, 4/12, 19/12, 8/2, 8/4, 23/4, 3/5, 15/7, 14/8, 29/8, 30/9, 19/8, 7/5, 6/10, 19/12, 22/12, 19/19, 17/6, 24/7, 20/8, 6/9, 13/9, 23/9, 29/10, 1920.  
During erection on board vessel — 6/5, 5/8, 28/8, 29/10, 6/12, 1920. 17/1, 18/1, 11/2, 12/2, 17/2, 18/2, 7/4, 1921.  
Total No. of visits 33.

Is the approved plan of main boiler forwarded herewith

yes.

Dates of Examination of principal parts—Cylinders 28/11, 4/12, 19/12, 8/2, 8/4, 23/4, 3/5, 15/7, 14/8, 29/8, 30/9, 19/8, 7/5, 6/10, 19/12, 22/12, 19/19, 17/6, 24/7, 20/8, 6/9, 13/9, 23/9, 29/10, 1920.  
Connecting rods 8/5, 23/7, 29/8, 7/18 Crank shaft 23/4, 30/9, 18 Thrust shaft 8/4, 23/8, 6/10, 19 Tunnel shafts 8/4, 23/8, 6/10, 19 Screw shaft 8/4, 23/8, 6/10, 19 Propeller 3/5, 18, 7/5, 19.  
Stern tube 4/12, 19, 23/8, 18 Steam pipes tested 18/1, 1921. Engine and boiler seatings 5/8, 23/8, 1920. Engines holding down bolts 6/12, 20, 19/1, 21.  
Completion of pumping arrangements 12 Feb. 1921. Boilers fixed 6/12, 1920. Engines tried under steam 19/2, 18/2, 1921.  
Completion of fitting sea connections 28 Aug. 1920. Stern tube 28 Aug. 1920. Screw shaft and propeller 28 Aug. 1920.  
Main boiler safety valves adjusted 12 Feb. 1921. Thickness of adjusting washers No adjusting washers, check nuts fitted.  
Material of Crank shaft SM I Steel Identification Mark on Do. R 4-18 ATP. Material of Thrust shaft SM I Steel Identification Mark on Do. R 10-19, C.K.  
Material of Tunnel shafts SM I Steel Identification Marks on Do. R 10-19, C.K. Material of Screw shafts SM I Steel Identification Marks on Do. R 10-19, C.K.  
Material of Steam Pipes Siemens Martin Steel. Test pressure 555 lbs. per square inch.  
Is an installation fitted for burning oil fuel No. Is the flash point of the oil to be used over 150°F. ✓  
Have the requirements of Section 49 of the Rules been complied with ✓  
Is this machinery duplicate of a previous case No. If so, state name of vessel ✓

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

In accordance with the Rules for Special Survey we have examined the material and workmanship from the commencement of construction until the final trial under steam and found it good in every respect.

The dimensions are as specified, and in accordance with the Rules, the approved plans and the requirements contained in the letters E dated the 31<sup>st</sup> May 1916, 21<sup>st</sup> Sept. 1917, 28<sup>th</sup> Febr. 28<sup>th</sup> Oct. 1918 and 1<sup>st</sup> May 1920.

The material used in the construction of the engines, boilers and superheaters has been tested as required by the Rules or as per Secretary's letter S dated the 11<sup>th</sup> Febr. 1915.

On the trial trip the engines and boilers worked satisfactorily. —

Recommend the vessel's machinery to have notation of **LMC-4.21** in the Register Book. —  
It is submitted that this vessel is eligible for THE RECORD. + LMC. 4.21.

The amount of Entry Fee ... £. 64 : 20 :  
Special ... £. 904 : 15 :  
Electric Lighting Installation ... £. 156 : 20 :  
Donkey Boiler Fee ... £. 786 : 60 :  
Travelling Expenses (if any) ... £. 20 : 4 : 1921.

Committee's Minute

Assigned

TUE. 16 AUG. 1921

+ LMC 4.21



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