

REPORT ON MACHINERY.

Received at London Office 20 APR. 1921

Date of writing Report 11th April 1921 When handed in at Local Office 19 Port of Copenhagen

No. in Survey held at Copenhagen Date, First Survey 28th Novr. 1919 Last Survey 7th 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 Kæft og Flydedok Tons } Gross 1570
 Net 897
 When built 1919-21

Engines made at Elsinore By whom made Akt. Helsingørs Jernstøbt og Maskinbyggeri when made 1917-20

Boilers made at Elsinore By whom made Akt. Helsingørs Jernstøbt 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 11.318" 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
 in the propeller boss boxed 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 Sham 150 1/2" Water 100 1/2" Stroke 150 1/2" No. and size of Suctions connected to both Bilge and Donkey pumps
and Ballast Pump In Engine Room 4 off " 2 1/4" diam. In Holds, &c. In fore hold 2 off " 3" diam. In after hold 2 off " 3" diam. In tunnel well
one 2 1/4" diam. In fore peak tank and after peak tank one off in each " 3" diam. In double bottom tank 2 1/2" & 3" diam. each arranged as per approved plan.

No. of Bilge Injections 1 off sizes 5" Connected to condenser, or to circulating pump yes 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. Leeds). - Stays: - Frodingham Iron & Steel Works, Scunthorpe.
 Rivets: - Henze 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 25th 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.
lap joint
 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 rivets: 93.68 Working pressure of shell by rules 185.5 lbs. per sq. in. Size of manhole in shell 12" x 16"
 plate: 83.96 Back end plates: 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"
corrugated.

Length of plain part top: 9 1/16" Thickness of plates crown: 9 1/16" Description of longitudinal joint welded. No. of strengthening rings ✓
 bottom: 9 1/16"

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.
Top = 190 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: Top = 200 lbs.

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 5/16" + 1/32" Material of Lower back plate S.M. Steel Thickness 1 3/16" + 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 5/16" + 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 15/16" 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 ✓

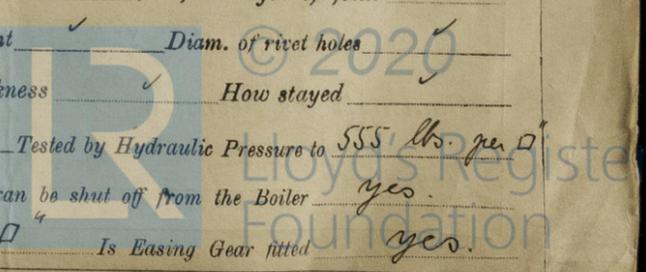
Pitch of rivets ✓ Working pressure of shell by rules ✓ Crown plates ✓ Thickness ✓ How stayed ✓

SUPERHEATER. Type Schmidt's Patent Date of Approval of Plan 28th February 1918. Tested by Hydraulic Pressure to 555 lbs. per sq. in.

Date of Test 7th May 1919 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

2400-969700-186200



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 gaskets 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,

Helsingfors Jernvarefabrik
R. Kuidren

Manufacturer.

Dates of Survey while building: During progress of work in shops -- 28/11, 4/12 1917, 8/2, 8/4, 23/4, 31/5, 15/9, 14/8, 29/8, 30/7, 19/8, 7/5, 6/10, 19/12, 22/12, 1919, 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, 4/12-17, 31/5, 15/9, 14/8, 19/8 Slides 28/11, 5/2, 23/4, 18 Covers 4/12-17, 23/4, 31/5-18 Pistons 28/11, 8/2, 31/5-18 Rods 8/2, 23/4, 27/8, 30/9-18. Connecting rods 8/2, 23/4, 29/8, 30/9-18 Crank shaft 4/12-17, 8/2, 5/4, 23/4, 30/9-18 Thrust shaft 8/4, 23/4, 8/10, 19 Tunnel shafts 8/4, 23/4, 8/10, 19 Screw shaft 8/4, 23/4, 8/10, 19 Propeller 31/5, 18, 7/5-19. Stern tube 4/12-17, 23/4, 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 SMI Steel Identification Mark on Do. P 4-18 A.T.P. Material of Thrust shaft SMI Steel Identification Mark on Do. P 10-19 C.K. Material of Tunnel shafts SMI Steel Identification Marks on Do. P 10-19 C.K. Material of Screw shafts SMI Steel Identification Marks on Do. P 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 31st May 1916, 21st Sept. 1917, 28th Feb. 28th Oct. 1918 and 1st 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 11th Feb. 1915. On the trial trip the engines and boilers worked satisfactorily. —

Surveyor Officer, Gen.

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

Table with 4 columns: Description, Amount, When applied for, When received.

The amount of Entry Fee	£. 64 : 20	When applied for,	
Special	£. 904 : 15	16. 4. 1921.	
Electric lighting Installation	£. 156 : 20	When received,	
Donkey Boiler Fee	£. 786 : 60	20. 4. 1921.	
Travelling Expenses (if any)			

A.E. Fisher, Chief Officer
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 16 AUG. 1921
Assigned + L.M.C. 4.21

