

Rpt. 4.

REPORT ON MACHINERY.

No. 4764.

Received at London Office TUE 12 APR. 1921

Date of writing Report 8th April 1921 When handed in at Local Office 8th April 1921 Port of Gothenburg

No. in Survey held at Gothenburg & Motala Date, First Survey 17th April 1918 Last Survey 29th March 1921

Reg. Book. 79965 on the Steel S.S. "KIRUNA" (Number of Visits 9.)

Master C.A.W. BOQVIST 1921 Built at Gothenburg By whom built Aktieb. Götaverken Tons { Gross 5474
Net 2806
When built 1921

Engines made at Motala By whom made Aktieb. Lindholmen-Motala when made 1921

Boilers made at Gothenburg By whom made Aktieb. Lindholmen-Motala when made 1921

Registered Horse Power Owners Trafikaktieb. Grängsberg-Gulvund Port belonging to Stockholm

Nom. Horse Power as per Section 28 430 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 28" x 48 1/8" x 72 1/16" Length of Stroke 48" Revs. per minute 73 Dia. of Screw shaft 16.06" Material of Steel

Is the screw shaft fitted with a continuous liner the whole length of the stern tube No liner fitted 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, 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 5'-7 23/32"

Dia. of Tunnel shaft 13.58" Dia. of Crank shaft journals 14.76" Dia. of Crank pin 14.76" Size of Crank webs 9 1/2" x 21 3/4" Dia. of thrust shaft under collars 14.76" Dia. of screw 16"-10 3/4" Pitch of Screw 16"-11 9/16" No. of Blades 4 State whether moveable Yes Total surface 90.50"

No. of Feed pumps 2 Diameter of ditto 4 1/2" Stroke 9'-1 1/32" Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 9'-1 1/32" Can one be overhauled while the other is at work Yes

No. of Donkey Engines 2 Sizes of Pumps 190 x 185 x 300 mm No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room Four 3 1/2" Ballast pump 150 x 170 x 200 mm In Holds, &c. Two 3 1/2" in No. 1 hold, two 3 1/2" in No. 2 hold, two 3 1/2" in No. 3 hold and two 3 1/2" in No. 4 hold.

No. of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump ✓ Is a separate Donkey Suction fitted in Engine room & size Yes 3 1/2"

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 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 Below

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 Bilge suction pipes for fore holds How are they protected Fitted in bilge below ceiling

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 engine room platform.

BOILERS, &c.—(Letter for record S.) Manufacturers of Steel Fima Thünen & Co. Mulheim, Ruhr.

Total Heating Surface of Boilers 56640 Is Forced Draft fitted Yes No. and Description of Boilers Three cylindrical multitubular.

Working Pressure 1850 Tested by hydraulic pressure to 280 lbs per sq. in. Date of test April 14.20-1920 No. of Certificate 149, 150 & 151.

Can each boiler be worked separately Yes Area of fire grate in each boiler 45.70 No. and Description of Safety Valves to each boiler 2 springloaded Area of each valve 12.20 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 About 2 metres Mean dia. of boilers 13'-2 5/8" Length 11'-5 1/16" Material of shell plates Steel

Thickness 1 1/8" Range of tensile strength 28-32 tons/sq. in. Are the shell plates welded or flanged No Descrip. of riveting: cir. seams ✓

long. seams Double butt straps Diameter of rivet holes in long. seams 15/16" Pitch of rivets 9 3/32" Lap of plates or width of butt straps 21 & 13 3/8"

Per centages of strength of longitudinal joint 86% Working pressure of shell by rules 185.5 lbs Size of manhole in shell 22" x 19"

Size of compensating ring 10 1/4" x 1 1/8" flanged No. and Description of Furnaces in each boiler 3 Morrison's Material Steel Outside diameter 39 3/8"

Length of plain part top 8.82" Thickness of plates bottom 16" Description of longitudinal joint Welded No. of strengthening rings ✓

Working pressure of furnace by the rules 201 lbs Combustion chamber plates: Material Steel Thickness: Sides 16 1/4" Back 16 1/4" Top 16" Bottom 11 1/4"

Pitch of stays to ditto: Sides 8.55 x 7.1" Back 8.5 x 6.3" Top 9.84 x 7.87" If stays are fitted with nuts or riveted heads Both Working pressure by rules 186

Material of stays Steel Area at smallest part 1.780 Area supported by each stay 77.50 Working pressure by rules 207 lbs End plates in steam space: Material Steel Thickness 1 1/16" Pitch of stays 8.3 x 15.7" How are stays secured Double nuts and riveted washers Working pressure by rules 186 lbs Material of stays Steel

Area at smallest part 4.910 Area supported by each stay 2560 Working pressure by rules 199 lbs Material of Front plates at bottom Steel

Thickness 13 3/16" Material of Lower back plate Steel Thickness 13 3/16" Greatest pitch of stays As per plan Working pressure of plate by rules ✓

Diameter of tubes 3" Pitch of tubes 4 1/4" x 4 1/8" Material of tube plates Steel Thickness: Front 3/8" Back 23/32" Mean pitch of stays 8 3/8"

Pitch across wide water spaces 13.8" Working pressures by rules 269 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 9 7/8" x 0.67" Length as per rule 99 1/2" Distance apart 7.87" Number and pitch of stays in each Two, 9.84"

Working pressure by rules 193 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 Date of Approval of Plan No plan submitted Tested by Hydraulic Pressure to 50 kg per sq. cm.

Date of Test 9th & 25th Aug. 1918. Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler Yes

Diameter of Safety Valve 1 3/4" Pressure to which each is adjusted 195 lbs. Is Easing Gear fitted Yes

IS A DONKEY BOILER FITTED? *No*

If so, is a report now forwarded? ☒

SPARE GEAR. State the articles supplied:— 2 conn. rod top-end bolts and nuts, 2 conn. rod bottom-end bolts and nuts, 2 main bearing bolts and nuts, 1 set of coupling bolts, 1 set of feed and bilge pump valves, 1 set of piston springs for L.P. piston, a quantity of assorted bolts and nuts, iron of various sizes, 1/3 crank shaft, 1 propeller shaft with nut, 2 propeller blades and 2 studs and nuts, 1 pair of conn. rod top and bottom end brasses, 1 eccentric stop, 1 valve spindle, 1 set of rings for H.P. and I.P. pistons, 1 set of piston rings for H.P. & I.P. piston valves, 3 main and 3 auxiliary check valves, 1 set air pump valves, 6 cyl. cover studs and nuts, 6 slide valve chest cover studs and nuts, 6 junking bolts, 12 plain & 4 stay boiler tubes, 20 main condenser tubes, 10 auxil. condenser tubes, 1 safety valve spring of each size.

The foregoing is a correct description.

AKTIEBOLAGET LINDHOLMEN-MOTALA

[Signature]

Manufacturer.

Dates of Survey while building
During progress of work in shops -- 1918: April 14, 30, June 1, July 6, Aug 7, Sept. 5, 6, Oct. 8, 10, 11, Nov. 12, 18, Dec. 11, 12, 30, 1919: Jan. 23, 24, 24, 25, Feb. 17, 18, 19, March 3, 4, 31
During erection on board vessel -- April 1, 11, May 15, 16, 17, June 4, 5, 18, 19, July 10, 11, Aug. 27, Sept. 16, 23, 29, Oct. 7, 27, Nov. 22, 4, 6, 7, Dec. 17, 31, 1920: April 14, June 7, 9
Total No. of visits 91

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

" " " donkey " " " *Yes*

Dates of Examination of principal parts—Cylinders 6/1, 12/1, 19/1, 21/1, Slides 2/1, 12/1, 19/1, Covers 31/3/19, Pistons 19/2/19, Rods 19/2/19
Connecting rods 19/2/19, Crank shaft 11/4/19, Thrust shaft 10/10/18, Tunnel shafts 30/9/20, Screw shaft 30/9/20, Propeller 17/12/20
Stern tube 29/11/20, Steam pipes tested 3/3/21, 4/3/21, Engine and boiler seatings 20/22/21, Engines holding down bolts 10/1/21
Completion of pumping arrangements 22/3/21, Boilers fixed 9/3/21, Engines tried under steam 19/3/21
Completion of fitting sea connections 5/2/20, Stern tube 9/2/20, Screw shaft and propeller 17/12/20
Main boiler safety valves adjusted 29/3/21, Thickness of adjusting washers *✓*

Material of Crank shaft *Steel* Identification Mark on Do. *5445 2.18. CK. 9.20. AS.* Material of Thrust shaft *Steel* Identification Mark on Do. *5445 2.18. CK. 9.20. AS.*
Material of Tunnel shafts *Steel* Identification Marks on Do. *See below* Material of Screw shafts *Steel* Identification Marks on Do. *5445 2.18. CK. 9.20. AS.*
Material of Steam Pipes *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 *Yes* If so, state name of vessel *S/S "Skagen", S/S "C.F. Ligevalch"*

General Remarks (State quality of workmanship, opinions as to class, &c.)
Identification Marks: Tunnel shafts, *5445 2.18. CK. 9.20. AS.*, *5447 2.18. CK. 9.20. AS.*, *5448 2.18. CK. 9.20. AS.*, *5445 2.18. AFG. 9.20. AS.*, *5456 3.18. CK. 9.20. AS.*, *5457 3.18. CK. 9.20. AS.*, *5455 3.18. CK. 9.20. AS.*
Spare propeller shaft *5445 2.18. AFG. 9.20. AS.*, Spare crank shaft *5445 2.18. CK. 9.20. AS.*

This machinery has been built under special survey and all the requirements of the Rule have been complied with. The cylinders have been tested by hydraulic pressure to 250, 140 & 45 lbs per square inch respectively.
The shafting as per forging reports attached.
The workmanship is good.

The machinery of this vessel is worthy in our opinion to be classed in the Register Book of this Society with the notation of +LMC.3.21, being in good and safe working condition at a working pressure of 185 lbs per square inch

The amount of Entry Fee *£ 91:00*
Special Engine Survey Fee *£ 703:80*
Boiler Survey Fee *£ 651:00*
Donkey Boiler Fee *£ 325:78*
Installation Fee *£ 678:65*
Travelling Expenses (if any) *£ 678:65*

V. Paulsen Asunden
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute
Assigned *+ LMC.3.21*
F.D.