

## REPORT ON MACHINERY.

No. 449

Received at London Office

TUE APR. 17 1923

Date of writing Report 9th April 1923 When handed in at Local Office

19 Port of Malmö

No. in Survey held at Helsingborg

Date, First Survey 28th September 1922 Last Survey 19th March 1923

Reg. Book.

80802 on the Steel S. S. "SONJA," Helsingborgs Varf's A.B.'s Yard N° 44

(Number of Visits 28)

Gross 1828

Net 1038

Master

Built at

Vachholm

By whom built

A.B. Vachholmsvarvet

When built

1923

Engines made at

Stockholm

By whom made

Bergsunds Mek. Verkstad

when made

1920-22

Boilers made at

Stockholm

By whom made

Bergsunds Mek. Verkstad

when made

1920-22

Registered Horse Power

Owners

A.B. Transmarin

Port belonging to

Helsingborg

Nom. Horse Power as per Section 28

206

Is Refrigerating Machinery fitted for cargo purposes

No

Is Electric Light fitted

Yes

## ENGINES, &amp;c.—Description of Engines

Triple expansion

No. of Cylinders 3

No. of Cranks 3

Dia. of Cylinders

19 1/4", 31 1/8", 51 3/16"

Length of Stroke

35 1/16"

Revs. per minute

105

Dia. of Screw shaft

11.5"

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

bederwall protecting gland fitted

Dia. of Tunnel shaft

9.71"

Dia. of Crank shaft journals

10.19"

Dia. of Crank pin

260Z

Size of Crank webs

290x180Z

collars

260Z

Dia. of screw

4100Z

Pitch of Screw

410Z

No. of Blades

4

State whether moveable

No

No. of Feed pumps

2

Diameter of ditto

79.5Z

Stroke

382Z

Can one be overhauled while the other is at work

Yes

No. of Bilge pumps

2

Diameter of ditto

79.5Z

Stroke

382Z

Can one be overhauled while the other is at work

Yes

No. of Donkey Engines

Three + donkey boiler feed.

Suction of Pumps

Helsingborg 10", 10 1/4", 10" Ballast

No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room

Four - 2 1/2" diam.

One 2 1/2" in tunnel well

In Holds, &amp;c.

Two - 2 1/2" diam. in each hold

No. of Bilge Injections

1

sizes

6"

Connected to condenser, or to circulating pump

Yes

Is a separate Donkey Suction fitted in Engine room &amp; size

Yes, 5"

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

None

How are they protected

Yes

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, &amp;c.—(Letter for record S)

Manufacturers of Steel Strömman Bruks AB, Degerfors &amp; Långmans Bruks AB, Långmans

Total Heating Surface of Boilers

29060

Is Forced Draft fitted

Yes

No. and Description of Boilers

Two multitubular

Working Pressure

13 kg/cm<sup>2</sup> = 185 lb/sq. in.

Tested by hydraulic pressure to

330 lb/sq. in.

Date of test

7th, 18th, 26th, 1922

No. of Certificate

200 + 202

Can each boiler be worked separately

Yes

Area of fire grate in each boiler

690

No. and Description of Safety Valves to

each boiler

each boiler

Two springloaded

Area of each valve

5.940

Pressure to which they are adjusted

190 lb/sq. in.

Are they fitted with easing gear

Yes

Smallest distance between boilers or uptakes and bunkers or woodwork

16"

Mean dia. of boilers

3600Z

Length

3550Z

Material of shell plates

Steel

Thickness

27Z

Range of tensile strength

44-50 kg/cm<sup>2</sup>

Are the shell plates welded or flanged

No

Descrip. of riveting: cir. seams

Double riveted

long. seams

Double butt strap

Diameter of rivet holes in long. seams

28.5Z

Pitch of rivets

170Z

Lap of plates or width of butt straps

414Z

Per centages of strength of longitudinal joint

rivets 105

plate 83.25

Working pressure of shell by rules

191 lb/sq. in.

Size of manhole in shell

400 x 500Z

Size of compensating ring

Diam 900Z, 22Z

No. and Description of Furnaces in each boiler

2 Monitors

Material

Steel

Outside diameter

1076Z

Length of plain part

top 2400Z

Thickness of plates

bottom 17Z

Description of longitudinal joint

Welded

No. of strengthening rings

None

Working pressure of furnace by the rules

231 lb/sq. in.

Combustion chamber plates: Material

Steel

Thickness: Sides

16.5Z

Back

16Z

Top

16.5Z

Bottom

20Z

Pitch of stays to ditto: Sides

205 x 200Z

Back

200 x 200Z

Top

200 x 205Z

If stays are fitted with nuts or riveted heads

Both

Working pressure by rules

227 lb/sq. in.

Material of stays

Steel

Area at smallest part

2.030

Area supported by each stay

640

Working pressure by rules

284 lb/sq. in.

End plates in steam space:

Double riveted

Working pressure by rules

231 lb/sq. in.

Material

Steel

Thickness

26Z

Pitch of stays

440 x 350Z

How are stays secured

Double rivets &amp; washers

Material of stays

Steel

Area at smallest part

5.940

Area supported by each stay

2390

Working pressure by rules

241 lb/sq. in.

Material of Front plates at bottom

Steel

Thickness

26Z

Material of Lower back plate

Steel

Thickness

23Z

Greatest pitch of stays

375 x 200Z

Working pressure of plate by rules

240 lb/sq. in.

Diameter of tubes

3"

Pitch of tubes

108Z

Material of tube plates

Steel

Thickness: Front

26Z

Back

22Z

Mean pitch of stays

105Z

Pitch across wide water spaces

380Z

Working pressures by rules

185 lb/sq. in.

Girders to Chamber tops: Material

Steel

Depth and

thickness of girder at centre

215Z-2.22Z

Length as per rule

765Z

Distance apart

205Z

Working pressure by rules

245 lb/sq. in.

Steam dome: description of joint to shell

%

of strength of joint

%

Diameter

%

Thickness of shell plates

%

Material

%

Pitch of rivets

%

Working pressure of shell by rules

%

Crown plates

%

Thickness

%

How stayed

%

## SUPERHEATER.

Type Smith's patent

Date of Approval of Plan

%

Tested by Hydraulic Pressure to

50 kg by B.V.

Date of Test

%

Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler

Yes

Diameter of Safety Valve

38Z

Pressure to which each is adjusted

190 lb/sq. in.

Is Easing Gear fitted

Direct on spindle

%

%

%

%



IS A DONKEY BOILER FITTED? *Yes*

If so, is a report now forwarded? *Yes*

SPARE GEAR. State the articles supplied:— *2 connecting rod top end bolts and nuts, 2 connecting rod bottom end bolts and nuts, 2 main bearing bolts, 1 set of coupling bolts, 1 set of feed and bilge pump valves, 1 set of piston springs, a quantity of assorted bolts and nuts, Iron of various sizes, 1 propeller shaft, a number of cylinder cover pin bolts and slide valve chest pin bolts, 2 feed pump valves with seats, 2 bilge pump valves with seats, 2 air pump valves with seats, 1 set of ballast pump valves with seats, 1 set of donkey pump valves with seats, 1 set of boiler check valves with seats, 2 safety valve springs for main boilers, 2 ditto for donkey boiler, 10 ordinary boiler tubes, 3 stay tubes.*

The foregoing is a correct description,

HELSEINGBORG WAREF ABTIEBOLAG

*Penny & Møller*

Manufacturer

Dates of Survey while building: During progress of work in shops: *24/9, 27/9, 17/10, 18/10, 19/10, 19/10, 25/10, 27/10, 30/10, 10/11, 21/11, 21/11, 28/11, 28/11, 5/12, 1922, 9/1, 25/1, 16/2, 19/2, 26/2, 5/3, 8/3, 13/3, 14/3, 16/3, 17/3, 1923*  
During erection on board vessel: *28*  
Total No. of visits: *28*

Is the approved plan of main boiler forwarded herewith? *Retained in file*

Dates of Examination of principal parts: Cylinders *22/11/22* Slides *22/11/22* Covers *22/11/22* Pistons *22/11/22* Rods *22/11/22*  
Connecting rods *22/11/22* Crank shaft *25, 27, 30/11/22* Thrust shaft *25/11/22* Tunnel shafts *22/11/22* Screw shaft *17/10/22* Propeller *17/10/22*  
Stern tube *16/2/23* Steam pipes tested *16/2/23* Engine and boiler seatings *25/11/22, 25/1/23* Engines holding down bolts *22/11/22, 25/1/23*  
Completion of pumping arrangements *13/3/23* Boilers fixed *25/1/23* Engines tried under steam *19/3/23*  
Completion of fitting sea connections *13/3/23* Stern tube *17/10/22* Screw shaft and propeller *13/3/23*  
Main boiler safety valves adjusted *16/2 March, 1923* Thickness of adjusting washers *Double nuts fitted*

Material of Crank shaft *Steel* Identification Mark on Do. *B* Material of Thrust shaft *Steel* Identification Mark on Do. *B*  
Material of Tunnel shafts *Steel* Identification Marks on Do. *B* Material of Screw shafts *Steel* Identification Marks on Do. *LR 7127 V.B. 17.10.22*  
Material of Steam Pipes *Steel* Test pressure *555 lbs/sq"*

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. *These engines and boilers have been manufactured by Bergsunds Mek. Verkstad, Stockholm, under the supervision of the surveyors to Bureau Veritas Registry. The engines and boilers have been fitted on board at Helsingborg under our inspection and to our satisfaction. The sea cocks and valves propeller and fastenings examined. The cylinders, pistons, slide valves with casings, covers and rods, engine framing, thrust block, condenser and columns examined. The crank, thrust and intermediate shafting also the propeller shaft examined. The pumps, pipes and bilge connections examined. The pumping as per approved plan. The steam pipes tested to three times the working pressure. Feed pipes tested as per Rule.*

The machinery of this vessel is worthy in our opinion to be classed in the Register Book of this Society with the notation of *LHC 3.23* being in a good and safe working condition. Working pressure of the main boilers *185 lbs/sq"* and working pressure of the donkey boiler *100 lbs/sq"*.

The amount of Entry Fee ... £ *43.00* When applied for, *10/4 1923*  
Special ... £ *676.00*  
Donkey Boiler Fee ... £ : :  
Travelling Expenses (if any) £ : :  
When received, *21/4 1923*

*V. Adilow, F.R.Palmer, G. Jørgensen*  
Engineer Surveyors to Lloyd's Register of Shipping.

Committee's Minute *TUE 24 APR 1923*

Assigned *LHC 3.23*  
*F.D. O.C.*



Malmö

Continuation of Report No. 449 dated 9<sup>th</sup> April 1923 on themachinery of the S.S. "SONJA," Helsingborgs Varf AB. S.S. N<sup>o</sup> 44.

The scantlings of the main and donkey boilers checked and found in accordance with the approved plans.

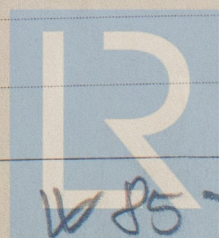
The main boilers have been tested with hydraulic pressure to 330 lbs per square inch. The donkey boiler has been tested with hydraulic pressure to 200 lbs per square inch.

Electric installation as per report for 13 attached.

Now done:

A large number of engine frame and column joint bolts with nuts renewed. The L.P. crank shaft renewed due to pores in the forward journal. The L.P. slide valve casing cover patched. The main engine pump guide stage, stated to have been broken away from condenser when moving engines, replaced by a new stage satisfactorily secured.

All safety valves adjusted under steam, the boilers found tight and the machinery found working satisfactorily during the trial trip.



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