Rpt. 4b.

REPORT ON OIL ENGINE MACHINERY.

No. 5584

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Date of writing Report 9th Jan. 1923 When handed in at Local Office 9th Jan. 1923 Port of Gothenburg

No. in Survey held at Gothenburg. Date, First Survey 5th Decemb 1922 Last Survey 29th Decemb 1923

Reg. Book. Supplement. 4021 3 on the ~~Single~~ Twin ~~Triple~~ Screw vessels "NUOLJA" Number of Visits 76. Tons Gross 6872 Net 3681

Master ✓ Built at Gothenburg By whom built Aktieb. Götaverken Yard No. 361 When built 1923

Engines made at Gothenburg By whom made Aktieb. Götaverken Engines No 531-2 When made 1923

Donkey Boilers made at Gothenburg By whom made Aktieb. Götaverken Boiler No. When made 1923

Brake Horse Power ✓ Owners Trafikaktieb. Grängesberg-Oxelösund Port belonging to Stockholm

Nom. Horse Power as per Rule 480 ✓ Is Refrigerating Machinery fitted for cargo purposes No ✓ Is Electric Light fitted Yes ✓

OIL ENGINES, &c.—Type of Engines Two Diesel Oil Engines ✓ 2 or 4 stroke cycle 4 ✓ Single or double acting Single ✓

Maximum pressure in cylinders 36 kg/cm² ✓ No. of cylinders 2×6-12 ✓ No. of cranks 2×6 = 12 ✓ Diameter of cylinders 590 m/m [23 3/16"] 234

Length of stroke 900 m/m [35 7/16"] ✓ Revolutions per minute 130 Means of ignition Diesel System ✓ Kind of fuel used Crude oil ✓

Is there a bearing between each crank Yes ✓ Span of bearings (Page 92, Section 2, par. 7 of Rules) 788 m/m ✓

Distance between centres of main bearings 1180 m/m ✓ Is a flywheel fitted Yes ✓ Diameter of crank shaft journals as per Rule 356 m/m ✓ as fitted 365 m/m ✓

Diameter of crank pins 365 m/m ✓ Breadth of crank webs as per Rule ✓ as fitted 780 m/m Thickness of ditto as per Rule 248 m/m ✓ as fitted 295 m/m ✓

Diameter of flywheel shaft as per Rule 356 m/m ✓ as fitted 365 m/m ✓ Diameter of tunnel shaft as per Rule 236 m/m ✓ as fitted 240 m/m Diameter of thrust shaft as per Rule 248 m/m ✓ as fitted 295 m/m ✓

Diameter of screw shaft as per Rule 365 m/m ✓ as fitted 275 m/m Is the screw shaft fitted with a continuous liner the whole length of the stern tube No ✓

Is the after end of the liner made watertight 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 ✓ If without liners, is the shaft arranged to run in oil Yes ✓

Type of outer gland fitted to stern tube Cederwalli prot. gland ✓ Length of stern bush 1330 m/m ✓ Diameter of propeller 3359 m/m ✓

Pitch of propeller 2820 m/m ✓ No. of blades 4 ✓ state whether moveable No ✓ Total surface 2×3.71 = 7.42 square ~~feet~~ met. ✓

Method of reversing Brown's gear ✓ Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes ✓ Thickness of cylinder liners 37.5 - 48 m/m

Are the cylinders fitted with safety valves Yes ✓ Means of lubrication Mechanical Are the exhaust pipes and silencers water cooled or lagged with non-conducting material Both ✓ If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine The exhaust is led to the funnel ✓ No. of cooling water pumps 2 Is the sea suction provided with an efficient strainer which can be cleared within the vessel Yes ✓ No. of bilge pumps fitted to the main engines None Diameter of ditto ✓ Stroke ✓

Can one be overhauled while the other is at work ✓ No. of auxiliary pumps connected to the main bilge lines 2 How driven By electric motors.

Sizes of pumps Diam.= 165 m/m; Stroke 230 m/m No. and sizes of suctions connected to both main bilge pumps and auxiliary bilge pumps :—In engine room Two 3½" One 3½" in tunnel and in holds, etc. Two 3½" to the deep tank & each hold. The 100 tons ballast pump is also connected to the main bilge line. No. of ballast pumps 2 How driven By electric motors Sizes of pumps {One 100 tons plunger pump. One 350 tons centrif. pump.

Is the ballast pump fitted with a direct suction from the engine room bilges Yes. State size One 6" & one 8" Is a separate auxiliary pump suction fitted in Engine Room and size Yes. two 3" 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 fitted. 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 floor 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 all pipes, cocks, valves and pumps in connection with the machinery 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. If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork ✓

No. of main air compressors 2 No. of stages 3 Diameters 136, 520 & 580 m/m Stroke 300 m/m Driven by main engines.

No. of auxiliary air compressors 1 No. of stages 2 Diameters 350 & 400 m/m Stroke 260 m/m. Driven by electric motor

No. of small auxiliary air compressors 1 No. of stages 2 Diameters 34 & 106 m/m Stroke 80 m/m. Driven by steam engine

No. of scavenging air pumps None fitted Diameter ✓ Stroke ✓ Driven by ✓

Diameter of auxiliary Diesel Engine crank shafts as ~~per Rule~~ appr. 154 m/m as fitted 154 m/m. Are the air compressors and their coolers made so as to be easy of access Yes.

AIR RECEIVERS:—No of high pressure air receivers 8 Internal diameter 450, 353 & 190 m/m Cubic capacity of each 350, 175 & 33 litres.

Material Steel Seamless, lap welded or riveted longitudinal joint Seamless or lap welded Range of tensile strength 36 - 40 kg/mm²

Thickness 25, 21 & 15 m/m working pressure by Rules 65.0 kg/cm² No. of starting air receivers 2 Internal diameter 1800 m/m

Total cubic capacity 400 cubic feet (11.34 m³) Material Steel Seamless, lap welded or riveted longitudinal joint Riveted longitudinal joint

Range of tensile strength 45.7 - 47.3 kg/mm² thickness 25 m/m Working pressure by rules 26.5 kg/cm² Is each receiver, which can be isolated, fitted with a safety valve as per Rule Yes Can the internal surfaces of the receivers be examined Yes What means are provided for cleaning their inner surfaces The high pressure receivers by means of caustic soda. Is there a drain arrangement fitted at the lowest part of each receiver Yes

IS A DONKEY BOILER FITTED? Yes If so, is a report now forwarded? Yes

HYDRAULIC TESTS:—

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
Engine Cylinders	✓	✓	✓	-	INJECTION AIR RECEIVERS:
" " Covers	9/5/23. 6.11.14/6/23. 14,30/7/23	1.0 kg/cm²	6.0 kg/cm²	R	Main engine ordinary No. 59 & 60
" " Jackets	14/5/23	"	6.0 "	R	LLOYDS TEST 1846 LBS WP 923 LBS
" Piston ~~Water~~ Oil Passages	15/6/23	"	7.0 "	R	J.Q. 6.1.23.
Main Compressors ~~1st Stage~~ High pressure air cooling pipes-spaces	15/6/23	65.0 kg/cm²	5.0 "	R	Main engine spare:- No. 52.54
" ~~2nd~~ Cooling water spaces	4/5/23, 3/6/23	1.0 "	6 "	R	LLOYDS TEST 1846 LBS WP 923 LBS
" ~~3rd~~ " Air coolers	18/7/23, 24/7/23, 25/7/23	5.0 & 20.0 "	10 & 40 kg/cm²	R 10 KG. GA 18.7.23 R 40 KG. GA. 24.7.23	J.Q. 6.1.23
Air Receivers-Starting	10/11/23	25.0 "	39 "	R. No. 59 & 60 LLOYDS TEST 39 KG/ WP 25 KG. AS. 10.11.23.	Aux. engine ordinary No. 61, 64, 65
" Injection		65.0 "	130 "	R	LLOYDS TEST 1846 Lbs WP — 915 Lbs.
Air Pipes	29/8/23, 5 & 10/12/23.	25.0 & 65.0 "	As per Rule	R	J.Q. 6.1.23.
Fuel Pipes	29/8/23.	65.0 "	As per Rule	R	Aux. engine spare:- No. 53
Fuel Pumps	19/6/23, 25/7/23.	65.0 "	10 & 100 kg/cm²	R 100 KG. GA. 25.7.23.	LLOYDS TEST 1846 LBS. WP — 915
Silencer	✓	✓	✓		J.Q. 6.1.23.
" Water Jacket	24/7/23	1.0 kg/cm²	4.0 kg/cm²	R	
Separate Fuel Tanks	30/6/23	✓	0.8 kg/cm²	R	

PLANS. Are approved plans forwarded ~~herewith~~ under separate cover for shafting No. 26/9/22. Receivers Yes. Separate Tanks No.
(If not, state date of approval)

SPARE GEAR For the main engines:—

1 cylinder cover complete with valves, valve seats and springs etc. and in addition 11 complete sets of discharge valves which can be used as air suction valves and 3 spindles, 6 valves and 3 sets for same, 11 complete sets of fuel valves and 3 extra valves & valve seats for same and 1 complete set of starting air valve.

1 piston with rod complete with all piston rings and in addition 6 sets of piston rings. P.T.O.

The foregoing is a correct description,

H.G. Hallmans Manufacturer.

Dates of Survey while building

During progress of work in shops:— 1922: Dec 5. 1923: Jan 30. Feb. 7 April 3.10 May 7.14.17.25.28.29. June 4.6.11.12.14.15.16.19.20.30. July 3.5.6.11.13.16.18.24. July 28.30 Aug. 2.29. Sept 11.27. Oct 17.25. Nov 19. Dec 5.6.10.15. Dec 1.12.15.19.

During erection on board vessel:— 1922: June 6.12. July 10.18. Aug 9.18.23.27. Sept 4.8.10.11.12.24.27. Oct 1.8.11.12.24.27. Nov 1.10.16.19. 21.23.

Total No. of visits 76.

Dates of Examination of principal parts—Cylinders 14/5/23 Covers 6.11.14/6/23, 14,30/7/23 Pistons 15/6/23 Rods 28/5/23 Connecting rods 20/6/23.

Crank shaft Thrust shaft Tunnel shafts 15/12/23 Screw shaft 15/7/23 Propeller 6/7/23 Stern tube 6/6/23 Engine seatings 6/6/23

Engines holding down bolts 11/7/23 Completion of pumping arrangements 19/12/23 Engines tried under working conditions 29/12/23

Completion of fitting sea connections 10/7/23 Stern tube 10/7/23 Screw shaft and propeller 9/8/23.

Material of crank shaft Steel Identification Mark on Do. Stab. S.361 LLOYDS No. 11628 14/12 11.22 | S.361 Port LLOYDS No. 4951-52 24/11.22 Material of thrust shaft steel Identification Mark on Do. Stab. LLOYDS & 5405 GA. 4.12.20 | Port LLOYDS & 5405 GA.

Material of tunnel shafts Steel Identification Marks on Do. See below Material of screw shafts Steel Identification Marks on Do. LLOYDS G. No. 953 GA 15.7.23 | LLOYDS G. No. GA.

Is the flash point of the oil to be used over 150° F. Yes.

Is this machinery duplicate of a previous case Yes If so, state name of vessel "HEMLAND," "STRÄSSA," "LAPONIA," "LULEÅ," "," LUGGSA, "ÖRELÖSUND."

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

Identification marks:—

Starboard tunnel shafts:— R. LLOYDS No. 954, 941, 937 & 936 GA. 15.12.23

Port tunnel shafts:— R. LLOYDS No. 956, 935, 1057 & 940 GA. 15.12.23

Aux. engine crank shafts:— R. LLOYDS No. 300. 683, 743 GA. 10.7.23. Eng. No. 541, 542, 543

Spare prop. shaft:— LLOYDS G. No. 1023 GA. 28.7.23

The main and auxiliary engines of this vessel have been built under special Survey and all the requirements of the Rules have been complied with. To be continued:—

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 12.23. being in a good and safe working condition. Working pressure of Donkey Boiler 100 lbs/□"

The amount of Entry Fee £ 91:00 ✓
Special ... £ 1770:86 ✓
Donkey Boiler Fee ... £ :
Travelling Expenses (if any) £ :

When applied for, 9th Jan. 1924

When received, 13/2/24

Committee's Minute TUE. FEB 5 19 4

Assigned + LMC 6.23 oil engines

V. Bülow Åslundén. Gothenburg
Engineer Surveyors to Lloyd's Register of Shipping.

Certificate (if required) to be sent to

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

of Gothenburg Continuation of Report No. 5584 dated 9th January 1924 on the

Machinery of H/S "NIOLJA" No. 40213 in the Supplement.

The workmanship is good and the material fulfils the requirements of the Rules and approved plans. Please see Secretary's letters initialed E of the 28th June 4th, 10th July, 26th Sept & 19th October 1922 and 22nd Jan, 9th Febr. & 11th May 1923 and Gothenburg letters initialed E of the 22nd, 27th June, 4th Sept & 5th Oct. 1922 and 18th Jan, 3rd March and 1st May 1923.

The main engines were tested under full working power on a six hours trial trip and proved to work satisfactorily both ahead and astern. The auxiliary engines were tested under full working power and found in good working conditions.

The auxiliary machinery consists of:—

Three two cylinders, 4-stroke single acting Diesel Oil Engines of cyl. diam 295 m/m and stroke 330 m/m each working a dynamo of 50 KW, 220 volts and 228 ampres, which have to supply the electric current motive power to the following:—

One 35 H.P shunt wound motor for working the ballast pump.
One 40 " " " " " " " " and bilge pump
Two 7.5 " " " " " " " bilge and sanitary pumps.
Two 15 " " " " " " " coling water pumps
Two 12 " " " " " " " lubrication oil pumps.
Two 6 " serie " " " " " main engine turning gear.
One 15 " shunt " " " " " oil pump to the daily service oil tanks.
One 90 " compound " " " " " auxiliary air compressor.
One 3 " shunt " " " " " drilling machine & turning lathe.
One 54 " compound " " " " " windlass.
Twelve 12.5 " serie " motors " " " winches.
Two 9 " " " " " " " " .
One 18 " shunt " motor " " " steering engine.

Also electric current for the lighting purpose with the voltage reduced from 220 volts to 110 volts after having passed the transformer.

Two 120 tons centrifugal pumps for the cooling water,
One 100 " plunger pump " " bilge & ballast purpose,
One 350 " centrifugal " " " ballast " ,
Two 15 " rotary oil pump for the forced lubrication,
One 50 " " " " " " daily service tanks,
Two 2×20 plunger pumps for bilge discharging and sanitary purpose.
These pumps have two plungers each Diam=6½"; Stroke=9";
This vessel is fitted with wireless telegraphy of Telefunken system.

Spare gear continued:

4 connecting rod top-end bolts and nuts and 4 lower halves of bearings,
4 " " bottom-end " " " " 3 upper " " " ,
8 main bearing studs & nuts and 2 halves of main bearings,
1 set of coupling bolts for the crank shaft, 1 set of coupling bolts for the intermediate shafts, 1 set of piston rings for one main engine, 1 complete set of working parts for a fuel pump and 12 extra plungers for same, 1 complete set

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cylinder cover studs and nuts, 1 cylinder liner, 1 complete set of all springs for one main engine and compressor, 3 cam rollers with pins for the exhaust valves, 1 ditto for the starting air valves, and 13 ditto for the fuel valves, 1 high pressure air cooling spiral for the compressor, 12 brass tubes for the compressor air coolers, 1 propeller shaft with nut, 2 propellers, 2 stopping rings for the Cederwalls glands, 1 set of springs for the same, A quantity of bolts and nuts and different lengths of pipes with unions and flanges for each.

For the auxiliary machinery:

4 complete sets of discharge valves with springs etc. which can be used as air suction valves and 2 extra valves and springs for the same, 4 complete sets of fuel valves and 2 extra valves for the same, 1 starting air valve, 2 sets of piston rings for one piston, 2 halves of connecting rod top-end bearings, 2 connecting rod bottom-end bolts and nuts and 2 halves of bearings for the same, 3 sets of valves for one compressor, 1 complete set of working parts for one fuel pump, 1 set of cylinder cover studs and nuts, 1 complete set of springs for one engine, 1 safety valve spring of each size, 2 halves of connecting rod top-end bearings for the auxiliary electric driven compressor, 2 halves of connecting rod bottom end " " " " " " " , 1 set of piston rings & 1 set of valves for the " " " " , 2 sets of valves for the bilge pumps, A quantity of bolts and nuts and different lengths of pipes with unions & flanges for each.

For the Donkey boiler:-

1 safety valve spring, 1 set of feed check valves, 1/2 set of fuel pump valves

A Saunders G Svanders.