

REPORT ON OIL ENGINE MACHINERY.

No. 5035

Received at London Office

of writing Report 31st March 1922 When handed in at Local Office 31st March 1922 Port of Gothenburg
 in Survey held at Gothenburg Date, First Survey 15th November 1920 Last Survey 20th March 1922
 Book. Single 199 on the Twin Triple Screw vessels "LAPONIA" Number of Visits 92
 Tons { Gross 5630
 Net 3156
 Built at Gothenburg By whom built Atlieb. Götaverken Yard No. 357 When built 1922
 Engines made at Gothenburg By whom made Atlieb. Götaverken Engine No. 557-58 When made 1922
 Key Boilers made at Gothenburg By whom made Bohus-Mek. Verkst. Atlieb. Boiler No. 344 When made 1922
 Horse Power 482 Owners Trafikaktieb. Grängesberg-Östösund Port belonging to Stockholm
 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

Solid injection system fitted 407 1-48.ENGINES, &c.—Type of Engines Two Diesel Oil Engine2 or 4 stroke cycle 4 Single or double acting SingleMaximum pressure in cylinders 38.0 kg/cm² No. of cylinders 2x6=12 No. of cranks 2x6=12 Diameter of cylinders 590 mm (23 1/8") 23 3/16"Length of stroke 900 mm (35 3/8") Revolutions per minute 135 Means of ignition Diesel system Kind of fuel used Texas oilIs there a bearing between each crank Yes Span of bearings (Page 92, Section 2, par. 7 of Rules) 788 mmDistance between centres of main bearings 1180 mm Is a flywheel fitted Yes Diameter of crank shaft journals as per Rule 365 mmDiameter of crank pins 365 mm Breadth of crank webs as per Rule 780 mm Thickness of ditto as per Rule 225 mmDiameter of flywheel shaft as per Rule 365 mm Diameter of tunnel shaft as per Rule 280 mm Diameter of thrust shaft as per Rule 295 mmDiameter of screw shaft as per Rule 315 mm Is the screw shaft fitted with a continuous liner the whole length of the stern tube No liner fittedIs the after end of the liner made watertight in the propeller boss Yes If the liner is in more than one length are the joints burned YesIf 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 YesIf two liners are fitted, is the shaft lapped or protected between the liners Yes If without liners, is the shaft arranged to run in oil YesIs the outer gland fitted to stern tube Externally protected Length of stern bush 1330 mm Diameter of propeller 3352 mmDiameter of propeller 2740 mm No. of blades 4 state whether moveable No Total surface 3.53 square feetMethod of reversing Brown gear Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Thickness of cylinder liners 37.5-48.2Are the cylinders fitted with safety valves Yes Means of lubrication Mechanical Are the exhaust pipes and silencers water cooled or lagged withconducting 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 Theexhaust is led to the funnel. No. of cooling water pumps 2 Is the sea suction provided with an efficient strainer which can be clearedwithin the vessel Yes No. of bilge pumps fitted to the main engines None Diameter of ditto StrokeCan one be overhauled while the other is at work Yes No. of auxiliary pumps connected to the main bilge lines 2 How driven By electric motorsSizes of pumps Diam. 165 mm Stroke 230 mm No. and sizes of suctions connected to both main bilge pumps and auxiliary bilge pumps:—In engine room Two 3 1/2" One 3 1/2" in tankIn holds, etc. Two 3 1/2" in each hold No. of ballast pumps 2 How driven By electric motors Sizes of pumps One 150 tonsIs a ballast pump is also connected to the main bilge line Yes State size 6" x 7" Is a separate auxiliary pump suction fitted inthe bilge room and size Yes, two 3" Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine Room always accessible YesAre the sluices on Engine Room bulkheads always accessible None fitted Are all connections with the sea direct on the skin of the ship YesAre they valves or cocks Both Are they fixed sufficiently high on the ship's side to be seen without lifting the floor plates YesAre 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 YesAre 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 anycommunication between the sea and the bilges Yes Is the screw shaft tunnel watertight Yes Is it fitted with a watertight door YesIs the upper engine room platform Yes If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork YesNo. of main air compressors 2 Removed 407 1-48. No. of stages 3 Diameters 136, 520 x 580 mm Stroke 300 mm Driven by Main EnginesNo. of auxiliary air compressors 1 One added 407 1-48. Rec. driven. No. of stages 2 Diameters 350 x 400 mm Stroke 260 mm Driven by Electric motorNo. of small auxiliary air compressors 1 No. of stages 2 Diameters 34, 106 mm Stroke 80 mm Driven by Steam engineNo. of scavenging air pumps None fitted Diameter Stroke Driven by StrokeDiameter of auxiliary Diesel Engine crank shafts as per Rule 154 mm No 2 + 3 Generators removed and Two 3 x 7.5 Kw sets substituted 407 1-48. Are the air compressors and their coolers made so as to be easy of access Yes2 Main Storing air receivers. Two spare injection air receivers and one auxiliary.RECEIVERS:—No. of high pressure air receivers 8 air receivers retained 407 1-48. Internal diameter 450, 358, 312, 189 mm Cubic capacity of each 350, 175, 130, 30 litersMaterial Steel Seamless, lap welded or riveted longitudinal joint Lap welded Range of tensile strength 22-26 tons/in²Thickness 25, 21, 19, 12 mm Working pressure by Rules 65 kg/cm² No. of starting air receivers 2 Internal diameter 1800 mmTotal cubic capacity 400 cubic feet Material Steel Seamless, lap welded or riveted longitudinal joint Riveted longitudinal jointRange of tensile strength 45.7-47.3 kg/cm² thickness 25 mm 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 theirinner surfaces The high pressure receivers by means of caustic soda and the others by means of sand 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? *No, will be forwarded in a few days.*

HYDRAULIC TESTS:-

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS	14.23.11/1/21	1.0 kg/cm ²	5.0 kg/cm ²	B	The injection air valves are marked:
COVERS	21.23.10/1/21	1.0 "	5.0 "	B	Sub. ordinary. Port N: 66
JACKETS	4.31/10/21	1.0 "	5.0 "	B	LLOYD TEST 1846.187/2 22.4.20 JOK.
PISTON WATER PASSAGES	14.16/1/21	65.0 "	130 "	B	
MAIN COMPRESSORS—1st STAGE	16/9/21	1.0 "	6.0 "	B	Sub. spare. Port N: 294
2nd	19/4/21	5.20.0 "	10.40 "	B	LLOYD TEST 1746.123 26.4.20 JOK.
3rd	3/9/20	25.0 "	39.0 "	B	
AIR RECEIVERS-STARTING	16.17.23/10/22	65.0 "	130.0 "	B	
INJECTION	14/12/22		As per rule		Sub. ordinary. Sub. hours trial trip and proved to work satisfactorily both ahead and astern.
AIR PIPES	20/12/22		"		The auxiliary engines have also been tested under full working power and found in good working condition.
FUEL PIPES	22/4/21	65.0 kg/cm ²	100 * 10 kg/cm ²		The auxiliary machinery consists of:-
FUEL PUMPS					Three two cylinders, 4 stroke, single acting Diesel Oil Engines of cyl. diam 332
SILENCER					and stroke 330 mm each working a dynamo of 50 kw, 220 volts and 273 amperes,
WATER JACKET	14/11/21	1.0 kg/cm ²	3.0 kg/cm ²	B	which have to supply the electric current motive power to the following:-
SEPARATE FUEL TANKS	14/3/21		0.75 "	B	One 25 HP shunt wound motor for working the ballast pump.

PLANS. Are approved plans forwarded herewith for shafting with *1/2" STRASSA* Receivers with *1/2" HEHLAND* Separate Tanks *No*.

SPARE GEAR For the main engines:-

1 cylinder cover complete, with all valves, valve seats and springs etc and in addition 10 complete sets of discharge valves with springs etc. which can be used as air suction valves and valves, 6 seats and 2 gaskets for the same, 6 air suction valves and seats, 6 complete sets of oil fuel valves with springs etc and 6 needle valves for the same and 1 complete set of starting air valve, 1 cylinder cover without valves, 1 piston with rod complete with all piston, rings, studs and nuts.

The foregoing is a correct description.

Anteologas Gassardke

Paul S. Kedeu

Manufacturer.

Dates of Survey while building	Dates of Examination of principal parts—Cylinders	Covers	Pistons	Rods	Connecting rods
During progress of work in shops-- May 2, 9, 15, 19 During erection on board vessel-- 1921 July 7 Sept 4 Oct 128 Nov 7, 14, 22, 23, 24, 25 Dec 14, 16, 23, 30 1922 Jan 3, 4, 9, 12, 30 Feb 1, 7, 22 March 8, 17, 18, 20	21.23.10/1/21	14.23.24/1/21	4.31/10/21	13/1/21	14/9/21
Total No. of visits 92.					

Crankshaft	Thrust shaft	Tunnel shafts	Screw shaft	Propellers	Stern tube	Engine seatings
Engines holding down bolts	Completion of pumping arrangements	Engines tried under working conditions	Completion of fitting sea connections	Stern tube	Screw shaft and propeller	
Material of crank shaft	Steel	Identification Mark on Do.	Steel	Identification Mark on Do.	Steel	Identification Marks on Do.
Material of tunnel shafts	Steel	Identification Marks on Do.	Steel	Identification Marks on Do.	Steel	Identification Marks on Do.

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 *HEHLAND & STRASSA*.

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

Hardwood tunnel shafts	Port tunnel shafts	Starboard engine crank shafts
N: 6000 12.20 CK N: 5099 12.20 CK N: 6001 12.20 CK N: 6003 12.20 CK N: 6074 2.21 CK	N: 6008 12.20 CK N: 6007 12.20 CK N: 6006 12.20 CK N: 6008 12.20 CK N: 6004 12.20 CK	LLOYD'S 12.3185 9.4.20 25.10.20 CA LLOYD'S 12.3536 25.10.20 CA LLOYD'S 12.3536 25.10.20 CA

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.

The machinery of this vessel is worthy in our opinion to be classed in the Register Book of this Society with the notation of *CLASS 322*, being in a good and safe working condition.

The amount of Entry Fee	£ 9.00	When applied for,
Special	£ 1770.36	17th March 1922
Donkey Boiler Fee	£	When received,
Travelling Expenses (if any)	£	19/4/22

Committee's Minute *FRI. 21 APR 1922*

Assigned ** L.R.C. 3.22*
oil engines

Dec. 4.6.2.

Continuation of Report No. 5035 dated 31st March 1922 on the

Machinery of the *4 1/2" LAPONIA*

The workmanship is good and the material fulfils the requirements of the Rules. The dimensions as specified and in accordance with the Rules and approved plans. Please see Secretary's letters initiated 6 of May 5, 1917, Jan 29-1918, Nov 27-1919, Jan 29, Feb 13, 17 April 28-1920 and May 13-1921 and Gothenburg letters initiated 6 of April 20 Dec 22-1917, Nov 18-1919, Jan 4, 22, Feb 6, April 14, 1920 and May 4, 1921.

The main engines were tested under full working power on a sea trial trip and proved to work satisfactorily both ahead and astern.

The auxiliary engines have also been tested under full working power and found in good working condition.

The auxiliary machinery consists of:-

- Three two cylinders, 4 stroke, single acting Diesel Oil Engines of cyl. diam 332 and stroke 330 mm each working a dynamo of 50 kw, 220 volts and 273 amperes, which have to supply the electric current motive power to the following:-
- One 25 HP shunt wound motor for working the ballast pump.
- One 15 HP " " " " " " and bilge pump.
- Two 15 HP " " " " " " cooling water pumps
- Two 6.5 HP " " " " " " bilge and sanitary pumps
- Two 10 HP " " " " " " lubrication oil pumps.
- One 15 HP " " " " " " oil pump to the daily service oil tanks.
- One 90 HP compound " " " " " " auxiliary air compressor
- Two 6 HP serie " " " " " " main engine turning gears
- One 5 HP shunt " " " " " " drilling machine & turning lathe.
- One 46 HP compound " " " " " " windlass
- Eight 12.5 HP serie " " " " " " winches
- Two 21 HP " " " " " " "
- One 20 HP shunt " " " " " " steering engine.
- One 52 HP " " " " " " oil discharge pump.

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 150 " rotary ballast pump, One 300 tons centrifugal ballast pump,
- One 15 " " " " " " oil pump for the forced lubrication,
- One 50 " " " " " " daily service tanks,
- Two 2x20 " pumps for bilge discharging and sanitary purpose. These pumps have two plungers each, dia 6 1/2", stroke 9".
- One 150 tons centrifugal pump for oil discharge.

This vessel is fitted with wireless telegraphy of the Telefunken system.

Spare gear continued:-

- In addition 6 sets of piston rings for one piston,
- 4 connecting rod top end bolts and nuts and 4 lower halves of bearings,
- 4 " " " " " " 3 upper " " "
- 8 main bearing bolts for the crank shafts, 1 set of coupling bolts for the intermediate shafts, 1 set of piston rings for the compressor, 1 set of valves and seats for the main compressors, 1 complete set of all working parts.

