

REPORT ON OIL ENGINE MACHINERY.

No. 5898.

-3 NOV 1924

Date of writing Report *31st Oct 1924* When handed in at Local Office *31st Oct 1924* Port of *Göteborg*
 No. in Survey held at *Göteborg* Date, First Survey *25th April 1922* Last Survey *25th October 1924*
 Reg. Book. *Single* Supplement. *Triple* on the *Twin* Screw vessels *"PAJALA"* Number of Visits *67*
 Master *✓* Built at *GÖTHENBURG* By whom built *AKTIEB. GÖTAVERKEN* Yard No. *362* When built *1924*
 Engines made at *GÖTHENBURG* By whom made *AKTIEB. GÖTAVERKEN* Engine No. *1649* When made *1924*
 Donkey Boilers made at *GÖTHENBURG* By whom made *AKTIEB. GÖTAVERKEN* Boiler No. *1497* When made *1924*
 Brake Horse Power *✓* Owners *TRAFIKAKTIEB. GRÄNGESBERG-ÖKELÖSUND* Port belonging to *STOCKHOLM*
 m. Horse Power as per Rule *480* Is Refrigerating Machinery fitted for cargo purposes *No* Is Electric Light fitted *Yes*

ENGINES, &c.—Type of Engines *Two Diesel Oil Engines* 2 or 4 stroke cycle *4* Single or double acting *Single*
 Minimum pressure in cylinders *36.0 kg/cm²* No. of cylinders *2x6 = 12* No. of cranks *2x6 = 12* Diameter of cylinders *590 mm [23 3/16"]*
 Length of stroke *900 mm [35 1/16"]* Revolutions per minute *130* Means of ignition *Diesel System* Kind of fuel used *Crude oil*
 There a bearing between each crank *Yes* Span of bearings (Page 92, Section 2, par. 7 of Rules) *788 mm*
 Distance between centres of main bearings *1180 mm* Is a flywheel fitted *Yes* Diameter of crank shaft journals as per Rule *356 mm*
 as fitted *365 mm* Diameter of crank shaft journals as fitted *365 mm*
 Diameter of crank pins *365 mm* Breadth of crank webs as per Rule *780 mm* Thickness of ditto as per Rule *222 mm*
 as fitted *780 mm* as fitted *225 mm*
 Diameter of flywheel shaft as per Rule *356 mm* Diameter of tunnel shaft as per Rule *236 mm* Diameter of thrust shaft as per Rule *248 mm*
 as fitted *365 mm* as fitted *240 mm* as fitted *295 mm*
 Diameter of screw shaft as per Rule *265 mm* Is the screw shaft fitted with a continuous liner the whole length of the stern tube *No liner fitted.*
 as fitted *275 mm*
 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 *✓*
 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 *✓*
 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*
 The outer gland fitted to stern tube *Endwalls prot. gland* Length of stern bush *1350 mm* Diameter of propeller *3352 mm*
 Diameter of propeller *2820 mm* No. of blades *4 on each prop.* state whether moveable *No* Total surface *213.71 = 7.49 square MET.*
 Method 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 mm*
 Are the cylinders fitted with safety valves *Yes* Means of lubrication *Mechanical* Are the exhaust pipes and silencers water cooled or lagged with
 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 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 tunnel.*
 in holds, etc. *Two 3 1/2" in 1st, 2nd, 3rd, 4th holds, Two 3 1/2" in 5th, 6th holds* No. of ballast pumps *2* How driven *By electric motors* Sizes of pumps *One 100 tons plunger pump*
 Is a 100 tons ballast pump is also connected to the main bilge line. *✓* State size *One 6" & one 8"* Is a separate auxiliary pump suction fitted in
 the ballast pump fitted with a direct suction from the engine room bilges *Yes*
 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 *Below* 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*
 Is the screw shaft tunnel watertight *Yes* Is it fitted with a watertight door *Yes*
 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 *36.580, 580 mm* Stroke *300 mm* Driven by *Main engines*
 No. of auxiliary air compressors *1* No. of stages *2* Diameters *350, 400 mm* Stroke *260 mm* Driven by *Electric motors*
 No. of small auxiliary air compressors *1* No. of stages *2* Diameters *34, 106 mm* Stroke *80 mm* 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 *154 mm* Are the air compressors and their coolers made so as to be easy of access *Yes*
 as fitted *154 mm*

RECEIVERS:—No. of high pressure air receivers *8* Internal diameter *450, 358, 190 mm* 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/cm²*
 Thickness *25, 21, 15 mm* Working pressure by Rules *65.0 kg/cm²* No. of starting air receivers *2* Internal diameter *1800 mm*
 Total cubic capacity *400 cubic feet (11.3 m³)* Material *Steel* Seamless, lap welded or riveted longitudinal joint *Riveted*
 Range 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 their
 inner surfaces *The high pressure air receivers by means of caustic soda steam* Is there a drain arrangement fitted at the lowest part of each receiver *Yes*

Yes

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

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS	✓	✓	✓	✓	INJECTION AIR RECEIVERS
" " COVERS	10.21/8/24	1.0 kg/cm ²	6.0 kg/cm ²	R	Main engine ordinary
" " JACKETS	3.12/6/24	"	5.0 "	R	Nº 57 & 58.
" " PISTON ^{OIL} WATER PASSAGES	4.6.12/6/24, 23/10/24	"	6.0 "	R	LLOYDS TEST.
MAIN COMPRESSORS—1st STAGE.....	7/19/23, 30/5/24, 18/7/24	65.0 kg/cm ²	130.0 "	R	1846 LBS.
HIGH PRESSURE AIR COOLING PIPES & SPACES.	5/4/24, 13/6/24, 26/8/24	1.0 "	6.0 "	R	HP 923 LBS.
COOLING " WATER SPACES 2nd "	6.16/6/24, 29/8/24, 11/9/24	5.20 "	10.40 "	R	J.R. 6.1.23.
AIR COOLERS 3rd "	10/4/24	25 "	39. "	R	Main engine space.
AIR RECEIVERS—STARTING	9/7/24	65. "	130. "	R	Nº 51.56
" INJECTION	11/9/24, 28/8/24, 7.9.13/10/24	25.65 "	75.130 "	R	LLOYDS TEST.
AIR PIPES	28/8/24	65. "	130. "	R	1846 LBS.
FUEL PIPES	11/6/24, 1/8/24	65. "	100.100 "	R	HP 923 LBS.
FUEL PUMPS	✓	✓	✓	✓	J.R. 6.1.23.
SILENCER	12/6/24	1. kg/cm ²	4.0 "	R	Aut. eng. ordinary
" WATER JACKET	9/9/24	✓	0.8 "	R	Nº 62.63 & 66
SEPARATE FUEL TANKS					LLOYDS TEST.

PLANS. Are approved plans forwarded herewith for shafting No 26/6/29 Receivers SEE PLANS FORWARDED WITH THE ENTRY REP OF "N. NOLJA" Separate Tanks No 14/5/23
(If not, state date of approval)

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 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 cuts of piston ring

AKTIEBOLAGET GÖTAVERKEN

Manufacturer.

Dates of Survey while building	During progress of work in shops - } During erection on board vessel - - } Total No. of visits	1922: April 25, May 18, 19, Aug. 22, Sept 8, 18, Oct 30 Nov 22, 29, 1923: May 14, June 14, July 18, Oct 9, 11, 12, 24 Nov 19, 20, 23, 24 Dec 3, 1924: Jan 24, Feb. 11, April 5, 10, May 17, 30, June 2, 3, 4, 6, 10, 11, 13, July 4, 9, 16, 17, 24 Aug 21, 22, 29, Sept 1, 11, 26, Oct 7, 9, 13
		1924: July 3, 24, Aug 16, Sept 5, 9, 11, 17, 18, 29, Oct 2, 16, 17, 22, 23, 25
		67

Dates of Examination of principal parts—Cylinders 3.12/6/24 Covers 1.21/8/24 Pistons 4.6.12/6/24 Rods 2.3/6/24 Connecting rods 3/6/24
Crank shaft ✓ Thrust shaft 2/9/24 Tunnel shafts 17/10/24 Screw shaft 5/12/23 Propeller 17/5/24 Stern tube 10/4/24 Engine seatings 4/7/24
Engines holding down bolts 2/6/24 Completion of pumping arrangements 17/10/24 Engines tried under working conditions 25/10/24
Completion of fitting sea connections 16/8/24 Stern tube 24/7/24 Screw shaft and propeller 16/8/24

Material of crank shafts	Steel	Identification Mark on Do.	LLOYDS CRH CRH 1325/1329 30.1.24	Material of thrust shafts	Steel	Identification Mark on Do.	LLOYDS M. 943.984 CA. 2.9.24
Material of tunnel shafts	Steel	Identification Marks on Do.	See below	Material of screw shafts	Steel	Identification Marks on Do.	LLOYDS M. 1024.10 CA. 5.12.23

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 "NOLIA"

General Remarks (State quality of workmanship, opinions as to class, &c.)		Identification marks:—	
Starboard tunnel shafts:	Port tunnel shafts:	Sub. engine crank shafts.	Spare propeller shaft.
<p>LLOYDS No. 955, 1025, 942, 938 & G.A. 17.10.24.</p>	<p>LLOYDS No. 1058, 1004, 939, 1005 & G.A. 17.10.24.</p>	<p>LLOYDS No. 5374 G.A. 18.5.22</p>	<p>LLOYDS No. 2875 G.A. 18.5.22</p>
		<p>LLOYDS No. 5878 G.A. 18.5.22</p>	<p>LLOYDS No. 5879 G.A. 18.5.22</p>
			<p>LLOYDS No. 1061 & G.A. 5.12.23.</p>

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 **+LHC 10.24**, being in a good and safe working condition. Working pressure of Donkey Boiler 100 lbs/sq."

The amount of Entry Fee ...	Rs 91:00	:	:	When applied for,
Special ...	Rs 1770:86	:	:	3rd Oct 1924
Donkey Boiler Fee ...	£	:	:	When received,
Travelling Expenses (if any) £		:	:	28/11/24

A. Sundén, Esq. Master.
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

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oil engines

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set of working parts for a fuel pump and 12 extra plungers for same, 1 complete set of 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, 13 ditto for the fuel valves, 1 high pressure air cooling coil for the compressor, 12 brastubes for the compressor air coolers, 1 propeller shaft with nut, 2 propellers, 2 stopping rings for the Cedarwall glands, set of springs for the same, A quantity of bolts and nuts and different lengths of pipes with unions and flanges suitable 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 etha valves and springs for the same, 4 complete sets of
 fuel valves and 2 etha valves for the same, 1 starting air valve, 2 sets of piston rings
 for one auxil engine piston, 2 halves of connecting rod top-end brasses, 2 connecting rod
 bottom end bolts and nuts and 2 halves of brasses for the same, 2 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 brasses for the auxiliary electric driven
 compressor, 2 " " " " " " " " " " " "
 " 1 set of piston rings and 1 set of valves for the auxiliary electric driven
 compressor, 2 sets of valves for the bilge pumps, A quantity of bolts and nuts and
 different lengths of pipes with unions and flanges suitable for each.

For the donkey boiler:

Safety valve spring, 1 set of feed chuck valves, 1/2 set of feed pump valves.

Göttingen