

## REPORT ON OIL ENGINE MACHINERY.

No. 620.

Received at London Office

23 DEC 1924

Date of writing Report 17<sup>th</sup> Dec. 1924 When handed in at Local Office 17<sup>th</sup> Dec. 1924 Port of Malmö  
 No. in Survey held at Karlshamn Date, First Survey 12<sup>th</sup> June, 1923 Last Survey 5<sup>th</sup> Nov. 1924  
 Reg. Book. Single }  
 Supplements. Twin }  
 88679 on the Triple } Screw vessel "EPOCA"  
 Master Built at Karlshamn By whom built A.B. Karlshamns Skippers-Yard No. 12 When built 1924  
 Engines made at Stockholm By whom made A.B. Atlas Diesel Engine No. 50049 When made 1919  
 Donkey Boilers made at Helsingborg By whom made Helsingborgs Värp- & Smednings-Boiler No. When made 1924  
 Brake Horse Power 500 Owners A/S Gørrissen & Co. Port belonging to Christiania  
 Nom. Horse Power as per Rule 132 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

OIL ENGINES, &c.—Type of Engines Polar Diesel Engine 2 or 4 stroke cycle 2 Single or double acting Single  
 Maximum pressure in cylinders 35 kg./cm<sup>2</sup> No. of cylinders 4 No. of cranks 4 Diameter of cylinders 400 mm  
 Length of stroke 720 mm Revolutions per minute 150 Means of ignition Diesel type Kind of fuel used Solar raw oil  
 Is there a bearing between each crank yes Span of bearings (Page 92, Section 2, par. 7 of Rules) 600 mm  
 Distance between centres of main bearings 920 mm Is a flywheel fitted yes Diameter of crank shaft journals as per Rule 243  
 as fitted 260 mm  
 Diameter of crank pins 260 mm Breadth of crank webs as per Rule 550 mm Thickness of ditto as per Rule 155 mm  
 as fitted 260 mm  
 Diameter of flywheel shaft as per Rule 260 mm Diameter of tunnel shaft as fitted 177 mm Diameter of thrust shaft as per Rule 260 mm  
 as fitted 215 mm Is the screw shaft fitted with a continuous liner the whole length of the stern tube No liners fitted  
 as fitted 215 mm 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 Admiralty patent box Length of stern bush 900 mm Diameter of propeller 2700 mm  
 Pitch of propeller 1830 mm No. of blades 4 state whether moveable no Total surface 222 dm<sup>2</sup> square feet  
 Method of reversing directly reversible Is a governor or other arrangement fitted to prevent racing of the engine when disengaged yes, but  
 Are the cylinders fitted with safety valves yes Means of lubrication Mechanical lubricators Are the exhaust pipes and silencers water cooled or lagged with  
 non-conducting material yes If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine  
 Exhaust extending to a 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 1 Diameter of ditto 90 mm Stroke 250 mm  
 in one be overhauled while the other is at work Yes No. of auxiliary pumps connected to the main bilge lines 2 How driven steam, hand, duplex  
 sizes of pumps capacity 400 liter per min. No. and sizes of suction connected to both main bilge pumps and auxiliary bilge pumps:—In engine room Five 2 1/2"  
 in holds, etc. Two in fore hold - 2 1/2". Two in after hold - 2 1/2". No. of ballast pumps One How driven steam - see above Sizes of pumps 150 x 150 x 150 mm  
 the ballast pump fitted with a direct suction from the engine room bilges yes State size 3" Is a separate auxiliary pump suction fitted in  
 engine room and size internal cond. pump 2 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 fired 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  
 ked from Bridge deck If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork  
 of main air compressors One No. of stages 3 Arranged MP 282.7 mm Stroke HP 340 mm Driven by Main motor  
 of auxiliary air compressors 2 in one motor No. of stages 2 Diameters LP 130 mm Stroke 200 mm Driven by Auxiliary motor  
 of small auxiliary air compressors One No. of stages 2 Diameters LP 72 mm Stroke 60 mm Driven by Hand  
 of scavenging air pumps Two Diameter 650 mm Stroke 560 mm Driven by Main motor  
 meter of auxiliary Diesel Engine crank shafts as per Rule 92 mm Are the air compressors and their coolers made so as to be easy of access yes  
 as fitted 92 mm  
 RECEIVERS:—No. of high pressure air receivers 1 main injection 2 spare 3 auxiliary Intergral diameter 240 mm 240 mm 240 mm Cubic capacity of each 72 liter  
 material wrought steel Seamless, lap welded or riveted longitudinal joint Range of tensile strength 36 kg per mm<sup>2</sup>  
 thickness 21 mm working pressure by Rules 70 kg No. of starting air receivers 1 Internal diameter 1250 mm  
 cubic capacity 4100 liter Material wrought steel Seamless, lap welded or riveted longitudinal joint lap welded  
 of tensile strength 36 kg per mm<sup>2</sup> thickness 15 mm Working pressure by rules 13 kg/cm<sup>2</sup> Is each receiver, which can be isolated,  
 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  
 surfaces Starting an receiver provided with manhole + Remainder steam cleaning apparatus Is there a drain arrangement fitted at the lowest part of each receiver yes



IS A DONKEY BOILER FITTED? *Donkey boilers fitted. If so, are reports now forwarded? Yes.*

HYDRAULIC TESTS:-

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS					Tested by Bureau Veritas
COVERS					" " " "
JACKETS					" " " "
PISTON WATER PASSAGES					" " " "
MAIN COMPRESSORS—1st STAGE					" " " "
2nd					" " " "
3rd					" " " "
AIR RECEIVERS—STARTING					" " " "
INJECTION					" " " "
AIR PIPES					" " " "
FUEL PIPES					" " " "
FUEL PUMPS					" " " "
SILENCER					" " " "
WATER JACKET					" " " "
SEPARATE FUEL TANKS					" " " "

PLANS. *Approved plans for use in the shafting* Appr. 4/1/23, 1/5/23 Receivers 6/6/23. Separate Tanks 3/12/23.

SPARE GEAR One cylinder cover complete for the main engine. Two complete sets of valves, valve seats, springs etc. for one cylinder of the main and of the auxiliary Diesel engines and fuel needle valves for half the number of cylinders of each engine. 1 piston complete with all piston rings, studs and nuts for the main engine. One set of piston rings for one piston of the main and of the auxiliary Diesel engines. One complete set of main skew wheels for one main engine. Two piston rod stop bolts (trunk piston), both main skew wheels for one main engine. (Spare gear continued on Rpt. 9b attached.)

The foregoing is a correct description.

AKTIEBOLAGET  
KARLSHAMNS SKEPPSVARF  
*J. J. Johansson* Manufacturer.

Dates of Survey while building	12/6, 29/7, 25/10, 12/11, 12/12, 18/12 1923
During erection on board vessel	22/3, 5/4, 8/7, 26/8, 27/8, 14/10, 15/10, 27/10, 28/10, 1/11, 2/11, 3/11, 5/11 1924
Total No. of visits	19
Dates of Examination of principal parts—Cylinders	26-27/6/24
Covers	26-27/6/24
Pistons	26-27/6/24
Rods	26-27/6/24
Connecting rods	26-27/6/24
Crank shaft	12/6/23
Thrust shaft	12/6/23
Tunnel shafts	8/7/24
Screw shaft	8/7/24
Propeller	18/2/23
Stern tube	27/10/23
Engine seatings	13/6/23
Engines holding down bolts	12/6/23, 14/10/24
Completion of pumping arrangements	27/10/24
Engines tried under working conditions	27/10/24
Completion of fitting sea connections	18/12/23
Stern tube	18/12/23
Screw shaft and propeller	18/12/23
Material of crank shaft	Steel
Identification Mark on Do.	B.V.
Material of thrust shaft	Steel
Identification Mark on Do.	B.V.
Material of tunnel shafts	Steel
Identification Marks on Do.	B.V.
Material of screw shaft	Steel
Identification Marks on Do.	B.V.
Is the flash point of the oil to be used over 150° F.	yes.
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.) The main and auxiliary engines of this vessel, built in 1919 by Messrs. A.B. Atlas Diesel, Stockholm, to the order of Messrs. A.B. Karlshamn Skeppsvarf, under the supervision of the Bureau Veritas surveyors, have been thoroughly examined by the undersigned and found in good condition and well preserved in every respect while in stock at Karlshamn. The workmanship good. The tunnel and propeller shafting tested as per rule; forging reports attached. The daily supply and settling tanks as per approved plans have been tested as per rule. Donkey boilers fitted as per Rpt. 5b attached. (General remarks continued on Rpt. 9b.)

The amount of Entry Fee	£ 54.60	When applied for,	17/12 1924
Special	£ 500.00	When received,	
Donkey Boiler Fee	See Rpt. 5b.		
Travelling Expenses (if any)	£ 20.1.25		

Committee's Minute

Assigned

TUES. 20 JAN 1925

Lt. Col. H. 24  
oil engine subject

*G. J. J. J. J.*  
Engineer Surveyor to Lloyd's Register of Shipping.

Rpt. 9a.

Port of Malmö

Continuation of Report No. 620 dated 17<sup>th</sup> December 1924 on the

m/s "Opoca", A.B. Karlshamn Skeppsvarf's Yard No. 12.

Spare gear, continued:-

for the main and for the auxiliary Diesel Engines.  
2 bottom end bolts and nuts, both for main and for the auxiliary engines.  
2 main bearing bolts and nuts, both for main and for the auxiliary engines.  
1 set of coupling bolts for the crank shaft.  
1 set of coupling bolts for the intermediate shaft.  
1 complete set of piston rings for each piston of the main and of the auxiliary engines. *compressors*  
1 half set of valves for the main and for the auxiliary compressors.  
1 fuel pump complete set of all working parts.  
1 fuel pump complete set of all working parts for the auxiliary engines.  
1 set of valves for the daily fuel supply pump. 1 set of valves for the water circulating pumps. 1 set of valves for one bilge pump. 1 set of valves for the scavenge pump. 1 set of valves for the lubricating oil pump.  
1 bucket and rod for the lubricating oil pump.  
A quantity of assorted bolts and nuts, including one set of cylinder cover studs and nuts.  
Lengths of pipes suitable for the fuel delivery and the blast pipes to the cylinders, and the air delivery from the compressors to the receivers, with unions and flanges suitable for each.  
1 spare propeller and 1 spare propeller shaft.

General remarks, continued:-

The vessel left Karlshamn for Aalborg, Denmark, where it was stated the survey would be completed, as follows:-  
The starboard donkey boiler safety valve to be repacked to shell of boiler.  
Casing gear to be fitted to both donkey boiler safety valves.  
The safety valve waste steam pipes to be rearranged.  
Saw all to be fitted in way of the donkey boiler oil fuel burners.  
Controlling gear to be fitted to the donkey boiler fire extinguishing valves.  
The oil fuel transfer pump suction to be rearranged.  
Controlling gear to be fitted to the stop valve of the oil fuel transfer pump.  
Controlling gear to be fitted to the valves of the oil fuel settling tanks, port and starboard sides of the engine room, and drain and gauge cocks to be made self-closing.  
Controlling gear to be fitted to the valves of the oil fuel tank, supplying fuel to the donkey boilers.  
Oil fuel copper pipes to the donkey boiler burners to be replaced by steel pipes.  
The engine room flooring to be completed and a covering plate to

To be continued.



ms "Epoca," AB. Karlshamn Skeppvarv's Yard No. 12.  
General remarks, continued:-

be fitted to way of the main motor fly wheel. ✓

The electric lighting installation was only commenced at Karlshamn and stopped on account of a strike.

The Copenhagen Surveyors have been informed of the outstanding requirements.

This machinery is eligible in my opinion to be classed LMC 11,24 in the Register Book when the survey has been completed as above. OIL ENGINES. O.G. Donkey boiler pressures 100 + 90 lbs per sq. inch.