

## REPORT ON OIL ENGINE MACHINERY.

No. 12218

FEB 11 1939

Date of writing Report 3<sup>rd</sup> Febr. 1939 When handed in at Local Office 9<sup>th</sup> Febr. 1939 Port of Gothenburg

No. in Survey held at Gothenburg Date, First Survey 7<sup>th</sup> June 1938 Last Survey 31<sup>st</sup> Jan. 1939

Reg. Book. IN SUPPL. 90232 on the Single Twin Triple Quadruple Screw vessel M/S "TRONDHEIM"

Tons { Gross 8257.82 Net 4950.97

Built at Gothenburg By whom built ERIKSBERGS M.V. AKTIEB. Yard No. 287 When built 1939

Engines made at Gothenburg By whom made ERIKSBERGS M.V. AKTIEB. Engine No. 219 When made 1939

Donkey Boilers made at Gothenburg By whom made ERIKSBERGS M.V. AKTIEB. Boiler No. 592 When made 1939

Brake Horse Power 3680 Owners A/S TANK Port belonging to OSLO

Nom. Horse Power as per Rule 644 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted YES

Trade for which vessel is intended OPEN SEA SERVICE

OIL ENGINES, &c. Type of Engines Vertical Diesel, Crosshead type, Solid injection 2 or 4 stroke cycle 2 Single or double acting Double

Maximum pressure in cylinders 49 kg/cm<sup>2</sup> Diameter of cylinders 17 1/16" = 450 mm. Length of stroke 47 1/4" = 1200 mm No. of cylinders 6 No. of cranks 6

Mean Indicated Pressure TOP 7.0 kg/cm<sup>2</sup> BOTTOM 6.3 kg/cm<sup>2</sup> Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 840 mm Is there a bearing between each crank Yes

Revolutions per minute 125 Flywheel 3900 kgm<sup>2</sup> Weight 50219520 kgm<sup>2</sup> Means of ignition Compression Kind of fuel used Diesel oil

Crank Shaft, { Solid forged dia. of journals 360 mm Crank pin dia. 360 mm Mid. length breadth ✓ Thickness parallel to axis 216-224 mm  
 { Semi built as fitted 360 mm Crank Webs Mid. length thickness ✓ shrunk Thickness around eyehole 205 mm  
 { All built

Flywheel Shaft, diameter as per Rule ✓ Intermediate Shafts, diameter as fitted 443 mm. Thrust Shaft, diameter at collars as fitted 360 mm.

Tube Shaft, diameter as per Rule ✓ Screw Shaft, diameter as fitted 450 mm. Is the { tube } shaft fitted with a continuous liner { Yes

Bronze Liners, thickness in way of bushes as per Rule 21.4 mm Thickness between bushes as fitted 22 mm Is the after end of the liner made watertight in the propeller boss Yes If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner Liner in one length

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 ✓ Is an approved Oil Gland or other appliance fitted at the after end of the tube shaft Yes If so, state type Vickers "Vista" gland, Simplex no 3 Length of Bearing in Stern Bush next to and supporting propeller 2180 mm.

Propeller, dia. 5029 mm Pitch 3150 mm No. of blades 4 Material Brongze whether Moveable No Total Developed Surface 8.06 m<sup>2</sup> sq. feet

Method of reversing Engines Direct reversible Is a governor or other arrangement fitted to prevent racing of the engine when disengaged Yes Means of lubrication Forced

Thickness of cylinder liners 31 mm Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled or lagged with non-conducting material lagged If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine led to funnel

Cooling Water Pumps, No. 2 freshwater 175 tons/hour Is the sea suction provided with an efficient strainer which can be cleared within the vessel Yes

Bilge Pumps worked from the Main Engines, No. None Diameter ✓ Stroke ✓ Can one be overhauled while the other is at work ✓

Pumps connected to the Main Bilge Line { No. and Size One piston pump, 20 tons/hour / duplex 190 x 150 x 250 mm / 1 ballast pump  
 { How driven electric Steam electric

the cooling water led to the bilges No If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements ✓

Ballast Pumps, No. and size One, 150 tons/hour Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size Two, 175 tons/hour each

Two independent means arranged for circulating water through the Oil Cooler Yes Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge pumps, No. and size:—In Machinery Spaces Four - 3 1/2" In Pump Room None

Holds, &c. Two 2 1/2" to hold, one 2 1/2" to fore pump room, Two 4" to main pump room. One 3", One 3 1/2", One 5",

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size ✓ Are the Bilge Suctions in the Machinery Spaces Yes

all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes Are they fitted with Valves or Cocks. Yes

from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges Yes Are the Overboard Discharges above or below the deep water line Above

all Sea Connections fitted direct on the skin of the ship Yes Are the Blow Off Cocks fitted with a spigot and brass covering plate Yes

they fixed sufficiently high on the ship's side to be seen without lifting the platform plates Yes How are they protected ✓

they each fitted with a Discharge Valve always accessible on the plating of the vessel Yes Have they been tested as per Rule Yes

at pipes pass through the bunkers No coal bunkers ✓

at pipes pass through the deep tanks Cargo pipes and heating coils ✓

all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times ✓

the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another Yes Is the Shaft Tunnel watertight No tunnel Is it fitted with a watertight door ✓ worked from ✓

If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork ✓

Main Air Compressors, No. None No. of stages ✓ Diameters ✓ Stroke ✓ Driven by ✓

Auxiliary Air Compressors, No. Two No. of stages 2 Diameters 250 & 280 mm. Stroke 190 mm Driven by Aux. engines

Small Auxiliary Air Compressors, No. 1 No. of stages 2 Diameters 9 cub. feet Stroke at 500 rev. Driven by Steam engine

What provision is made for first Charging the Air Receivers Small aux. air compressor

Scavenging Air Pumps, No. Two Capacity 290 m<sup>3</sup>/min Stroke ✓ Driven by Main engine

Auxiliary Engines crank shafts, diameter as fitted 150 mm. No. One 3 cyl. on / One 2 cyl. on Position abd side / port side Is a report sent herewith Yes

Have the Auxiliary Engines been constructed under special survey Yes

012229-012235-0029



AIR RECEIVERS:—Have they been made under survey ☒ Yes ✓ State No. of Report or Certificate ☒ ✓  
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 and cleaned ☒ Yes ✓ Is a drain fitted at the lowest part of each receiver ☒ Yes ✓  
Injection Air Receivers, No. None Cubic capacity of each ☒ ✓ Internal diameter ☒ ✓ thickness ☒ ✓  
Seamless, lap welded or riveted longitudinal joint ☒ ✓ Material ☒ ✓ Range of tensile strength ☒ ✓ Working pressure ☒ ✓  
Starting Air Receivers, No. One for aux. engs Two for main engs Total cubic capacity 180 litres 2 x 8 = 16 m<sup>3</sup> Internal diameter 370 mm. 1600 mm. thickness 14 mm. 22.5 mm.  
Seamless, lap welded or riveted longitudinal joint Riveted SM-steel Range of tensile strength 40-42.5 kg/cm<sup>2</sup> 41-47 Working pressure 40 kg/cm<sup>2</sup> 25 kg/cm<sup>2</sup>

IS A DONKEY BOILER FITTED? ☒ Yes, two donkey boilers If so, is a report now forwarded? ☒ Yes ✓  
Is the donkey boiler intended to be used for domestic purposes only ☒ No ✓  
PLANS. Are approved plans forwarded herewith for Shafting No, 26.4.37 Receivers No, 19.4.37 Separate Fuel Tanks No 31.5.38  
Donkey Boilers No 19.4.37 General Pumping Arrangements No 1.9.37 Pumping Arrangements in Machinery Space No 1.9.37  
Oil Fuel Burning Arrangements ☒ ✓

#### SPARE GEAR.

Has the spare gear required by the Rules been supplied ☒ Yes ✓  
State the principal additional spare gear supplied Five sets of fuel valves, one exhaust top piston valve complete with rings, one exhaust bottom piston valve complete, four halves of crosshead bedding brasses, two halves of crankpin brasses, two halves of main bearing brasses, one cylinder liner, one propeller shaft, two impellers for scavenging air blowers.

The foregoing is a correct description,

Eriksbergs Mek. Verkstads Aktiebolag  
Gothenburg

Manufacturer.

Dates of Survey while building  
During progress of work in shops: 1938 June 7.6. July 16.18.19.22. Aug. 30. Sept. 2.10.17.20.23.23.24.27.29. Oct. 7.8.8.10.20.24.25.27.28.29.31.  
During erection on board vessel: 1938 Nov. 1.4.5.7.7.8.9.10.11.14.16.17.18.19. 1939 Jan. 2.12.23.24.25.26.28.28.29.30. Dec. 1.3.6.10.21.23. Jan. 3.5.7.10.16.19.23.24.  
Total No. of visits 86

Dates of Examination of principal parts—Cylinders 31.10.38 Covers 31.10.38 Pistons 4.11.38 Rods 29.10.38 Connecting rods 7.11.38  
Crank shaft 29.9.38 Flywheel shaft ☒ Thrust shaft 29.9.38 Intermediate shafts 8.10.38 Tube shaft ☒  
Screw shaft 25.10.38 Propeller 27.10.38 Stern tube 2.9.38 Engine seatings 31.10.38 Engines holding down bolts 22.12.38  
Completion of fitting sea connections 23.1.39 Completion of pumping arrangements 23.1.39 Engines tried under working conditions 31.1.39

Crank shaft, Material SM-steel Identification Mark LLOYD'S 4802-3 Flywheel shaft, Material ☒ Identification Mark ☒  
Thrust shaft, Material SM-steel Identification Mark LLOYD'S 4804 Intermediate shafts, Material SM-steel Identification Marks LLOYD'S 13904-2056  
Tube shaft, Material ☒ Identification Mark ☒ Screw shaft, Material SM-steel Identification Mark LLOYD'S 1961-13905

Identification Marks on Air Receivers Main (2 off) No 433 & 434 LLOYD'S TEST 40 KG WP 25 KG R 11.11.38 SF.  
Aux. No 1216 LLOYD'S TEST 80 ATM WP 40 ATM V.S. 6.12.37

Is the flash point of the oil to be used over 150° F. ☒ Yes ✓  
Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with ☒ Yes ✓  
Is the vessel (not being an oil tanker) fitted for carrying oil as cargo ☒ ✓ If so, have the requirements of the Rules been complied with ☒ ✓  
If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with ☒ No ✓  
Is this machinery duplicate of a previous case ☒ Yes ✓ If so, state name of vessel % Solör, Got. report 11972.

General Remarks (State quality of workmanship, opinions as to class, &c.) 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 shafting as per forging reports attached. Test sheets of donkey boiler and starting air receiver material are also attached. The workmanship is good and the materials fulfill the requirements of the Rules. The dimensions are as specified and in accordance with the Rules and approved plans. Regarding the auxiliary machinery please see separate reports now sent. The main and auxiliary engines have been tested under working conditions on a trial trip and found to work satisfactorily. The machinery of this vessel is eligible in our opinion to be classed in the Register Book of this Society with notation of LMC 1.39. Working pressure of donkey boilers 142 lbs/sq"

The amount of Entry Fee £114.00 When applied for, 9th Febr. 1939  
Special ... £2036.80  
Donkey Boiler Fee ... £ When received, 27.2.1939  
START. AIR REC. FEE £119.70  
Travelling Expenses (if any) £

Committee's Minute

Assigned

+ LMC 1.39 Ol Eng  
2DB 142 lb CL

G. W. W. W. J. Aspelin  
Engineer Surveyors to Lloyd's Register of Shipping.



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