

REPORT ON OIL ENGINE MACHINERY.

No. 10084
17 DEC 1934

Received at London Office

Date of writing Report 12th Dec 1934 When handed in at Local Office 15th Dec 1934 Port of Göteborg
No. in Survey held at Göteborg Date, First Survey 7th July Last Survey 8th Dec 1934
Reg. Book. SUPPLEMENT Number of Visits 49

89464 on the Single Triple Quadruple Screw vessel "GRENA" Tons Gross 8117.28
Net 4890.63

Built at GÖTHEBURG By whom built A. B. GÖTAVERKEN Yard No. 483 When built 1934
Engines made at GÖTHEBURG By whom made A. B. GÖTAVERKEN Engine No. 1072 When made 1934
Donkey Boilers made at GÖTHEBURG By whom made A. B. GÖTAVERKEN Boilers No. 1894/1095 When made 1934
Brake Horse Power 3450 Owners A/S J. LUDWIG MOWINCKELS REDERI Port belonging to BERGEN
Nom. Horse Power as per Rule 653 Is Refrigerating Machinery fitted for cargo purposes NO Is Electric Light fitted YES
Trade for which vessel is intended GENERAL

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

Maximum pressure in cylinders 45 kg/cm²
Mean Indicated Pressure 7 kg/cm² Diameter of cylinders 240 mm [29 1/8"] Length of stroke 500 mm [19 3/4"] No. of cylinders 8 No. of cranks 8

Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 1004 mm Is there a bearing between each crank Yes
Revolutions per minute 110 Flywheel dia. mm Weight mm Means of ignition Diesel system Kind of fuel used Diesel fuel oil

Crank Shaft, dia. of journals as per Rule 478 mm as fitted 488 mm Crank pin dia. 488 mm Crank Webs Mid. length breadth mm Mid. length thickness mm Thickness parallel to axis 290-310 mm Thickness around eyehole 215 mm

Flywheel Shaft, diameter as per Rule mm as fitted mm Intermediate Shafts, diameter as per Rule 338 mm as fitted 345 mm Thrust Shaft, diameter at collars as per Rule 355 mm as fitted 375 mm

Tube Shaft, diameter as per Rule mm as fitted mm Screw Shaft, diameter as per Rule 373 mm as fitted 390-392 mm Is the tube screw shaft fitted with a continuous liner Yes

Bronze Liners, thickness in way of bushes as per Rule 19 mm as fitted 20 & 21 mm Thickness between bushes as per rule 14.5 mm as fitted 19 & 19.5 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 Lines 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 Fits tightly
If two liners are fitted, is the shaft lapped or protected between the liners Yes Is an approved Oil Gland or other appliance fitted at the after end of the tube shaft No If so, state type mm Length of Bearing in Stern Bush next to and supporting propeller 1575 mm

Propeller, dia. 4990 mm Pitch 3615 mm No. of blades 4 Material Brass whether Moveable No Total Developed Surface 9.44 m² sq. feet

Method of reversing Engines Direct reversible with compressed air as a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication Forced Thickness of cylinder liners Top 53.5 mm Bottom 32 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 a funnel

Cooling Water Pumps, No. Two - 125 tons/hour each 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. one Diameter 130 mm Stroke 250 mm Can one be overhauled while the other is at work Yes

Pumps connected to the Main Bilge Line { No. and Size one ballast pump 100 tons/hour one plunger pump 30 tons/hour one plunger pump 20 tons/hour
How driven Steam Steam By main engine
and steam pump 60 tons/hour in main pump room and 1 ditto in forward pump room.

Is 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 mm

Ballast Pumps, No. and size one 100 tons/hour Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size two - 70 tons/hour each
Are 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 Three - 3 1/2", Two - 2 1/2", One 2 1/2" from cofferdam In Pump Room and

In Holds, &c. None Two 2 1/2" in hold forward One 2 1/2" in fwd pump room Two 3 1/2" in main pump room All to separate pumps

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size one 5" (ballast pump) one 3 1/2" (separate bilge pump)
Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes Are the Bilge Suctions in the Machinery Spaces led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges Yes

Are all Sea Connections fitted direct on the skin of the ship Yes Are they fitted with Valves or Cocks Yes
Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates Yes Are the Overboard Discharges 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 the Blow Off Cocks fitted with a spigot and brass covering plate Yes
What pipes pass through the bunkers No coal bunkers How are they protected mm

What pipes pass through the deep tanks large hose & heating coils Have they been tested as per Rule Yes
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes

Is 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 Yes worked from mm

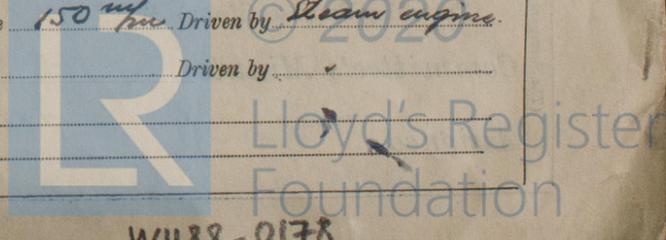
If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork mm

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

Auxiliary Air Compressors, No. one No. of stages 2 Diameters 235 & 90 mm Stroke 220 mm Driven by aux oil engine
Hand-cranking
Small Auxiliary Air Compressors, No. one No. of stages 2 Diameters 320 & 280 mm Stroke 150 mm Driven by Steam engine

Scavenging Air Pumps, No. mm Diameter mm Stroke mm Driven by mm

Auxiliary Engines crank shafts, diameter as per Rule 150 mm as fitted 150 mm



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AIR RECEIVERS:—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

High Pressure 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 by Rules ✓
Actual ✓

Starting Air Receivers, No. 2 Total cubic capacity 2 x 13.5 m³ = 27 m³ Internal diameter 1800 x 1850 mm thickness 25 x 25.5 mm

Seamless, lap welded or riveted longitudinal joint Riveted Material S.H. Steel Range of tensile strength 45.8-46.4 tps/mm² Working pressure by Rules 26.5 tps/cm²
Actual 25 tps/cm²

IS A DONKEY BOILER FITTED? Yes 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 6026/2-34 Receivers 26/2-34 Separate Tanks 11/7-34
(If not, state date of approval)

Donkey Boilers 17/2-34 General Pumping Arrangements 126/3-34 Oil Fuel Burning Arrangements ✓

SPARE GEAR.

Has the spare gear required by the Rules been supplied Yes.

State the principal additional spare gear supplied For the main engine: 1 cylinder liner with casting jacket, 4 fuel valves with 2 extra valve rods and 8 extra atomizers, 6 exhaust valves with 2 extra atomizers and 2 extra seats, 3 halves of crank pin brasses, 2 halves of cross brasses, 2 halves of main bearing brasses, for the fuel pumps: 8 plungers, 8 trunks, 8 slide valves, 8 slide valve chests, 4 valves complete, 4 pipes between fuel pump & fuel needle valve, 1 propeller shaft with 1 cast iron propeller, 6 bearing pads for the thrust bearing.
For aux. oil engine: 1 piston complete, 2 sets of piston rings, 2 fuel valves complete, 6 scav return valves, 2 atomizers, 1 fuel slide valve chest with valve shiner, 1 exhaust valve with 2 extra atomizers, 1 set of gudgeon pin brasses, 2 halves of crank pin brasses, 2 sets of main bearing brasses, 1 HP cooling coil, 1/2 set of L.P. suction & delivery valves.
Steam aux. engine: 1 set of 4 HP L.P. piston rings, 2 halves of brass rod top & bottom end brasses with bolts & nuts.
Handwinning steam compressor: 1 set of steam piston rings, 2 crank pin bearing bolts & nuts, 1 set of compressor piston rings, 1 crank pin bearing bolt & nut, 1/2 set of compressor valves. For the donkey boilers: 2 check valves, 15 plain & 5 stay tubes.

The foregoing is a correct description,

ARTIFABOLAGET GÖTAVERKEN
Ullst. 4e dnr

Manufacturer.

Dates of Survey while building: During progress of work in shops-- July 17, 31 Aug 14, 16, 18, 22, 27, 28, 29, 30, 31 Sept. 5, 6, 7, 11, 12, 14, 17, 19, 20, 22, 24, 28 Oct. 1, 2, 3, 4, 5, 6, 7, 13, 15, 16, 22, 24, 30
During erection on board vessel-- Aug. 31 Oct. 10 Nov. 2, 7, 9, 14, 15, 21, 28 Dec. 1, 4, 7, 8
Total No. of visits 49

Dates of Examination of principal parts—Cylinders 4/10 Covers 4/10 Pistons 24/9 2/10 Rods 2/10 Connecting rods 2/11
Crank shaft 16/8 Flywheel shaft ✓ Thrust shaft 18/8 Intermediate shafts 24/10 Tube shaft ✓
Screw shaft 28/1 14/9 Propeller 14/9 Stern tube 19/8 29/9 1/10 Engine seatings 3/8 Engines holding down bolts 2/11
Completion of fitting sea connections 15/10 Completion of pumping arrangements 7/12 Engines tried under working conditions 28/9 2/12
Crank shaft, Material S.H. Steel Identification Mark 440705 No. 2098, 2099 26.5.34 Flywheel shaft, Material ✓ Identification Mark ✓
Thrust shaft, Material S.H. Steel Identification Mark 440705 No. 4886 26.5.34 Intermediate shafts, Material S.H. Steel Identification Marks 440705 No. 9067 27.24.10.34
Tube shaft, Material ✓ Identification Mark ✓ Screw shaft, Material S.H. Steel Identification Mark 440705 9057, 9058 27.24.9.34

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 ✓

Is this machinery duplicate of a previous case Yes If so, state name of vessel "S. Borajara" Götaavskens 17/5 482

General Remarks (State quality of workmanship, opinions as to class, &c. The main & auxiliary machinery of this vessel has been built under Special Survey and all the requirements of the Rules have been complied with. The shafting and material of the donkey boilers as per test sheets attached. The workmanship is good and the material fulfils the requirements of the Rules. The dimensions are as specified and in accordance with the Rules & approved plans. The auxiliary machinery consists of one 3 cylinder, 4 stroke cycle Diesel oil engine having cylinder diameter 240 mm and 360 mm stroke and manufactured by Guss AB, Gästaverken of this port and 1 compound steam engine having cylinder diameter 11 & 16" and 6" stroke manufactured by Messrs S. Reader & Sons, Ltd, Nottingham each working a generator of 5.5 kW. The main & auxiliary engines have been tested on a trial trip and found to work satisfactorily.

The machinery of this vessel is eligible in my opinion to be classed in the Register Book with notation of + LHC 12.34. (Working pressure of the donkey boilers 150 lbs/sq)

The amount of Entry Fee .. £ 109:20 : When applied for, 15th Dec. 1934
Special £ 1959:23 :
Donkey Boiler Fee £ 152:88 : When received, 27.12.34
Travelling Expenses (if any) £ : 31

S. Benelius
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute 21 DEC 1934
Assigned + LHC 12.34 2 S.B. - 150 lbs
Oil Eng. Cf

CERTIFICATE WRITTEN



Certificate (if required) to be sent to the Surveyors are requested not to write on or below the space for Committee's Minute.