

REPORT ON OIL ENGINE MACHINERY.

No. 3048

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Date of writing Report 6/2 1952. When handed in at Local Office 8/2 1952. Port of M A L M Ö

No. in Survey held at Malmö Date, First Survey 1/6-51 Last Survey 29/1 1952.

Reg. Book. 35903s... on the Twin Triple Quadruple Screw vessel M/T "H A V E R U"

Built at Malmö By whom built Kockums Mek. Verkstads A.-B. Yard No. 319 When built 1952

Engines made at Malmö By whom made Kockums Mek. Verkstads A.-B. Engine No. 417 When made 1952

Donkey Boilers made at Paisley By whom made A.F. Craig & Co. Ltd. Boiler No. 941 When made 1950

Brake Horse Power Max. 5500, Serv. 5000 Owners A/S Havtor. Port belonging to O S L O

M.N. Power as per Rule 1556 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes

Trade for which vessel is intended

OIL ENGINES, &c.—Type of Engines KMV M.A.N. D8Z 60/110 2 or 4 stroke cycle 2 Single or double acting Double

Maximum pressure in cylinders 50 kg/cm² Diameter of cylinders 600 mm Length of stroke 1100 mm No. of cylinders 8 No. of cranks 8

Mean Indicated Pressure 5.5 kg/cm² Ahead Firing Order in Cylinders 1b, 4t, 3t, 6b, 2b, 5t Span of bearings, adjacent to the crank, measured from inner edge to inner edge 860 mm Is there a bearing between each crank Yes. Revolutions per minute 120

Flywheel dia. 2093 mm Weight 4250 kg Moment of inertia of flywheel (lbs. in² or Kg. cm²) 32.795x10⁶ Means of ignition Compr. Kind of fuel used Heavy oil.

Crank Shaft, Solid forged dia. of journals as appr. 440 mm Crank pin dia. 440 mm Crank webs Mid. length breadth 720 mm Thickness parallel to axis 275 mm

Flywheel Shaft, diameter as appr. 440-385 mm Intermediate Shafts, diameter as appr. 367 mm Thrust Shaft, diameter at collars as appr. 385 mm

Tube Shaft, diameter as fitted. 440-385 mm Screw Shaft, diameter as fitted. 410 mm Is the tube screw shaft fitted with a continuous liner Yes

Bronze Liners, thickness in way of bushes as appr. 20 mm Thickness between bushes as appr. 15 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

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 tube shaft No. If so, state type Length of bearing in Stern Bush next to and supporting propeller 1743 mm

Propeller, dia. 16'-4 7/8" Pitch 13'-1 7/8" No. of blades 4 Material Bronze whether moveable No. Total developed surface 91.8 sq. feet

Moment of inertia of propeller (lbs. in² or Kg. cm²) 108.891x10⁶ Kind of damper, if fitted

Method of reversing Engines Direct with Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes. Means of lubrication Forced Thickness of cylinder liners 41.5 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 salt w. 275 m³/h, 1 fresh w. 210 m³/h, 1 spare 275 m³/h 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 2-1 of 100 m³/h, 1 of 70 m³/h How driven One steam pump and one el. driven

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

Ballast Pumps, No. and size 1-100 m³/h Power Driven Lubricating Oil Pumps, including spare pump, No. and size 2-180 m³/h

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 3-90 mm, 2-90 mm in aft main cofferdam. In pump room Fwd. 1-32"

In holds, &c. 2-32" in dry cargo hold. 2-32" in fwd main cofferdam.

Independent Power Pump Direct Suctions to the engine room bilges, No. and size 2 - 125 mm.

Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes Yes. Are the bilge suction 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 steel boxes are they fitted with valves or cocks Both Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates. special covers 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 How are they protected

What pipes pass through the deep tanks Suctions from aft cofferdam 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 None 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. 2 No. of stages 2 diameters 300mm&110mm stroke 220mm driven by Aux. oil eng.

Small Auxiliary Air Compressors, No. 1 No. of stages diameters No. E273 stroke driven by Williams&James Harbour gen. set.

What provision is made for first charging the air receivers Small compressor

Scavenging Air Pumps, No. 2 Tandem diameter 1380 mm stroke 1110 mm driven by Main engine

Auxiliary Engines crank shafts, diameter as appr. 170 as fitted 170 Position 1 port and 1 stbd side in E.E. Is a report sent herewith Yes

Have the auxiliary engines been constructed under special survey Yes.

005194-005209-0231

AIR RECEIVERS:—Have they been made under survey. Yes ✓ State No. of report or certificate Nos. 203 & 204
Is each receiver, which can be isolated, fitted with a safety valve as per Rule.

Can the internal surfaces of the receivers be examined and cleaned. Yes ✓ Is a drain fitted at the lowest part of each receiver. Yes.

Spare Injection Air Receivers, No. 1 ✓ Cubic capacity of each. 200 lit. Internal diameter. 474 mm thickness. 13 mm
Seamless, welded or riveted longitudinal joint. El. welded Material. S.M. Steel Range of tensile strength. 49,4-50,3 kg/mm² Working pressure. by Rules. Actual. 30,0

Starting Air Receivers, No. 2 ✓ Total cubic capacity. 12 M³ Internal diameter. 1450 mm thickness. 25 mm
Seamless, welded or riveted longitudinal joint. Riveted Material. S.M. Steel Range of tensile strength. 49,7-50,7 kg/mm² Working pressure. by Rules. Actual. 30,0

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. 7.3.47
(If not, state date of approval)

Donkey boilers. 7.8.48 General pumping arrangements. 15.9.47 Receivers. 10.9.1943. Separate fuel tanks. Master.

Oil fuel burning arrangements. 18.7.51 Pumping arrangements in machinery space. 18.7.51 Engine.

Have Torsional Vibration characteristics been approved. Yes. ✓ Date of approval. 7.3.1947. Boilers

SPARE GEAR.

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

State the principal additional spare gear supplied. 1 propeller shaft

1 bronze propeller

2 top and 2 bottom cyl. liners

1 " " 1 " " covers

2 complete pistons with piston rods.

1 complete fuel injection pump.

The foregoing is a correct description,

Manufacturer.

Dates of Survey while building During progress of work in shops - - From 1st June, 1951 to 12th November, 1951.

During erection on board vessel - - From 14th November, 1951 to 29th January, 1952.

Total No. of visits. 89.

Dates of examination of principal parts—Cylinders. 22/3-7/9 (9 visits) Covers. 16/8-8/10 (10 visits) Pistons. 21,22/8-51 Rods. 31/7,1/8-51 Connecting rods. 17.7.51

Crank shaft. 8.11.51 after Flywheel shaft. 10.8.51 Thrust shaft. 2.11.51 Intermediate shafts. 2.11.51 Tube shaft.

Screw shaft. 21.11.50 Propeller. 4.6.51 Stern tube. 19.10.51 Engine seatings. 12.11.51 Engine holding down bolts. 19.12.51

Completion of fitting sea connections. 26.1.52 Completion of pumping arrangements. 24.1.52 Engines tried under working conditions. 29.1.52

Crank shaft, material. S.M. Steel Identification mark. Lloyd s 3356/57/58 Flywheel shaft, material. S.M. Steel Identification mark. Lloyd s 1221

Thrust shaft, material. S.M. Steel Identification mark. Lloyd s 108 Intermediate shafts, material. S.M. Steel Identification marks. Lloyd s 7

Spare screw. S.M. Steel Identification mark. Lloyd s 608 Screw shaft, material. S.M. Steel Identification mark. Lloyd s 6

Identification marks on air receivers. Nos. 203 & 204 LLOYD'S TEST 44 kg/cm², W.P. 30 kg/cm², A.B. 28.11.51

Welded receivers, state Makers' Name. Avesta Jernverk, Avesta.

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. ✓

Description of fire extinguishing apparatus fitted. Steam smothering under boilers and Skum-Trygg, cap. 10 lit. each. ✓

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo. Oil tanker. If so, have the requirements of the Rules been complied with. Yes.

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. M/T "NERVA", Malmö F.E.Rpt.No.2863.

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

This machinery has been built under Special Survey in accordance with the Rules and approved plans. The workmanship is good and the material fulfil the Rule requirements. Shafting as per forging reports enclosed.

The machinery of this vessel is eligible, in my opinion, to be classed in the Register Book with record of LMC 1.52. Working pressure of donkey boilers 180 lbs/sq and of exhaust gas economiser 171 lbs/sq.

S.S. of 2 start air rees.

The amount of Entry Fee. Kr. 220:-

Special ... Kr. 5950:-

Test. of pumps, cond., etc. Kr. 610:-

Donkey Boiler Fee ... £ :-

Test. & insp. spare parts Kr. 90:-

Travelling Expenses (if any) £ :-

When applied for. 8/2 19 52.

When received. 19.

Committee's Minute. FRI. 29 FEB 1952

Assigned. + LMC 1.52 Oil Eng.

C.H. 203 180lb