

Rpt. 4b

Date of writing report 18th Jan.-61 Received London 8 Port 28 May 59 No. 379 30 Dec.-61
Survey held at Jyväskylä, Finland No. of visits In shops 8 First date Last date
On vessel

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name PARANAGUA Gross tons
Owners Lloyd's Brasiliero Managers Port of Registry
Helsinki Valmet Oy Yard No. 203 ✓ When 1961
Hull built at Jyväskylä, Finland By Valmet Oy Rautpohjan Tehdas Eng. No. 103 ✓ When 1960
Main Engines made at By
Gearing made at By Blr. Nos. When
Donkey boilers made at By When
Machinery installed at Helsinki By Valmet Oy When

Particulars of restricted service of ship, if limited for classification

Particulars of vegetable or similar cargo oil notation, if required

Is ship to be classed for navigation in ice? Is ship intended to carry petroleum in bulk?

Is refrigerating machinery fitted? If so, is it for cargo purposes? Type of refrigerant

Is the refrigerating machinery compartment isolated from the propelling machinery space? Is the refrigerated cargo installation intended to be classed?

The following particulars should be given as fully and as clearly as possible. Where the answer is "No" or "None", say so! Ticks and other signs of doubtful meaning are not to be used. Where the wording is not applicable to the installation, a black line may be inserted. If the main engines have been constructed at another port and are covered by a separate report, the particulars given in that report need not be repeated below, but the port and report number should be stated.

No. of main engines 1 No. of propellers 1 Brief description of propulsion system Direct coupled heavy oil engine
MAIN RECIPROCATING ENGINES. Licence Name and Type No. B & W D.M. 850 VTBF-110
No. of cylinders per engine 8 ✓ Dia. of cylinders 500 mm stroke(s) 1100 mm 2 or 4 stroke cycle 2 ✓ Single or double acting single
Maximum approved BHP per engine 4,600 ✓ at 170 ✓ RPM of engine and 170 RPM of propeller.
Corresponding MIP 8 kg/cm² (For DA engines give MIP top & bottom) Maximum cylinder pressure 55 kg/cm² Machinery numeral 920 ✓
Are the cylinders arranged in Vee or other special formation? No If so, number of crankshafts per engine --

TWO STROKE ENGINES. Is the engine of opposed piston type? No If so, how are upper pistons connected to crankshaft?
Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers? valves in covers No. and type of mechanically driven scavenge pumps or blowers per engine and how driven --
No. of exhaust gas driven scavenge blowers per engine 2 Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action? Yes
If a stand-by or emergency pump or blower is fitted, state how driven elect., emerg., blower No. of scavenge air coolers 2 Scavenge air pressure at full power 0.69 kg/cm² Are scavenge manifold explosion relief valves fitted? Yes

FOUR STROKE ENGINES. Is the engine supercharged? Are the undersides of the pistons arranged as supercharge pumps? No. of exhaust gas driven blowers per engine
No. of supercharge air coolers per engine Supercharge air pressure Can engine operate without supercharger?
TWO & FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel 2 Inlet - Exhaust 1 Starting 1 Safety 1 ✓
Material of cylinder covers Cast Steel Material of piston crowns Special Steel Is the engine equipped to operate on heavy fuel oil? No
Cooling medium for : Cylinders fresh water Pistons oil Fuel valves oil Overall diameter of piston rod for double acting engines --
Is the rod fitted with a sleeve? -- Is welded construction employed for: Bedplate? Yes Frames? Yes Entablature? Yes Is the crankcase separated from the underside of pistons? Yes Is the engine of crosshead or trunk piston type? crosshead Total internal volume of crankcase 48 m³ ✓ No. and total area of explosion relief devices 8-2850 cm² total Are flame guards or traps fitted to relief devices? traps Is the crankcase readily accessible? Yes If not, must the engine be removed for overhaul of bearings, etc? -- Is the engine secured directly to the tank top or to a built-up seating? tank top How is the engine started? compressed air
Can the engine be directly reversed? Yes If not, how is reversing obtained? --
Has the engine been tested working in the shop? Yes How long at full power? 8 hours full load.

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 25/11/59 23/11/59 State barred speed range(s), if imposed 459Q.
for working propeller -- For spare propeller -- Is a governor fitted? Yes Is a torsional vibration damper or detuner fitted to the shafting? No
Where positioned? -- Type -- No. of main bearings 10 Are main bearings of ball or roller 10.2.61
type? No Distance between inner edges of bearings in way of crank(s) 654 mm Distance between centre lines of side cranks or eccentrics of opposed piston engines --

Crankshaft type: Built, semi-built, solid. (State which) Built
Diameter of journals 365 mm Diameter of crankpins Centre 365 mm Breadth of webs at mid-throw 690 mm Axial thickness of webs 190 mm thinnest section 226 mm
Side -- Pins Forged steel Minimum 44 kg/mm²
If shrunk, radial thickness around eyeholes Are dowel pins fitted? Crankshaft material Journals Forged steel Approved 44 "
Webs Cast steel Tensile strength 44 "
Diameter of flywheel 1652 mm Weight 900 kg Are balance weights fitted? Yes Total weight GD²=3940 Radius of gyration GD²=1400 kgm²
Diameter of flywheel shaft Coupling 650 mm Material Forged steel Minimum approved tensile strength 44 kg/mm²
Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Integral with thrustshaft.

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Lloyd's Register
Foundation

GENERAL REMARKS

State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and give recommendations for classification, including any special notation to be assigned. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

This machinery has been constructed under Special Survey in accordance with the Rules and approved plans. The workmanship and materials are good. The machinery has been tried under full working power and found good.

The machinery to be transported to Helsinki to be installed in the ship.

In our opinion this engine will be eligible to be classed +LMC (with date) when installed in the ship and tested as required by the rules.

D.S. Elliott & Åke Lindqvist
Engineer Surveyor to Lloyd's Register of Shipping.

PARTICULARS OF IDENTIFICATION MARKS ((Including Port of origin) of important Forgings and Castings. (Copies of certificates should be forwarded with report.)

CONNECTING RODS ÅBO Nos. 871-2, 910-11-12-13-14 & 15. 7/59 ÅL 11/10/60 D.S.E.
PISTON RODS: ÅBO Nos. 1016-17-18, 1072, -73, -74 & 76. 17/10/59 ÅL 24/11/60 D.S.E.
CRANKSHAFT OR ROTORSHAFT forw'd section CPN, 5314, V.L. 26/2/60, aft section CPN 5315 V.L. 26/2/60
FLYWHEEL SHAFT
THRUSTSHAFT ÅBO No 1081 D.S.E. 10/9/59
GEARING
INTERMEDIATE SHAFTS
SCREW AND TUBE SHAFTS
PROPELLERS
OTHER IMPORTANT ITEMS Turbocharger No 1 (B.39298) L.R.A.C. 15/3/60; No 2 (B.39297) L.R.A.C. 15/3/60.

Is the installation a duplicate of a previous case? Yes, Standard B&W eng. If so, state name of vessel Valmet Oy Yard Nos. 200-1-2, Guanabara, Todos os Santos & Turiacu.
Date of approval of plans for crankshaft 24/11/59 Straight shafting 24/11/59 Gearing Clutch

Separate oil fuel tanks Pumping arrangements Oil fuel arrangements

Cargo oil pumping arrangements Air receivers Donkey boilers

Dates of examination of principal parts:—

Fitting of stern tube Fitting of propeller Completion of sea connections Alignment of crankshaft in main bearings

Engine checks & bolts Alignment of gearing Alignment of straight shafting Testing of pumping arrangements

Oil fuel lines Donkey boiler supports Steering machinery Windlass

Date of Committee THURSDAY 13 JUL 1961

Decision

Special Survey Fee
Construction 326 000
Welding 6 000
Expenses 69 000