

Rpt. 4b

27 FEB 1961

Date of writing report 26th December, 1960 Received London Lisbon Port No. 8985
Survey held at Viana do Castelo and Lisbon No. of visits On vessel 13 First date 24th June, 1960 Last date 23rd January, 1961

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name "ESTREMADURA" Gross tons 700.67
Owners Companhia dos Caminhos de Ferro Portugueses Managers - Port of Registry LISBON
Hull built at Viana do Castelo By Est. Navais de Viana do Castelo Yard No. 48 Year Month When 1960/1
Main Engines made at Augsburg By MAN AG. Eng. No. 402 044/045 When 1959/60
Gearing made at Hameln By Eisenwerke Reintjes GmbH.
Donkey boilers made at - By - Blr. Nos. - When -
Machinery installed at Viana do Castelo By Estaleiros Navais de Viana do Castelo When 1960
Particulars of restricted service of ship, if limited for classification For Service in River Tagus.
Particulars of vegetable or similar cargo oil notation, if required -
Is ship to be classed for navigation in ice? No Is ship intended to carry petroleum in bulk? No
Is refrigerating machinery fitted? No If so, is it for cargo purposes? No 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 No. of propellers Brief description of propulsion system Engine - reverse gear - Propeller.

MAIN RECIPROCATING ENGINES. Licence Name and Type No.
No. of cylinders per engine Dia. of cylinders stroke(s) 2 or 4 stroke cycle Single or double acting
Maximum approved BHP per engine at 348 RPM of engine and 348 RPM of propeller.
Corresponding MIP (For DA engines give MIP top & bottom) Maximum cylinder pressure Machinery numeral 204
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? 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? No. and type of mechanically driven scavenge pumps or blowers per engine and how driven
No. of exhaust gas driven scavenge blowers per engine Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action?
If a stand-by or emergency pump or blower is fitted, state how driven No. of scavenge air coolers Scavenge air pressure at full power
Are scavenge manifold explosion relief valves fitted?

FOUR STROKE ENGINES. Is the engine supercharged? No Are the undersides of the pistons arranged as supercharge pumps? No 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 Inlet Exhaust Starting Safety
Material of cylinder covers Material of piston crowns Is the engine equipped to operate on heavy fuel oil?
Cooling medium for: Cylinders Pistons Fuel valves Overall diameter of piston rod for double acting engines
Is the rod fitted with a sleeve? Is welded construction employed for: Bedplate? Frames? Entablature? Is the crankcase separated from the underside of pistons?
Is the engine of crosshead or trunk piston type? Total internal volume of crankcase No. and total area of explosion relief devices
Are flame guards or traps fitted to relief devices? Yes Is the crankcase readily accessible? 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? Built up seating How is the engine started?
Can the engine be directly reversed? If not, how is reversing obtained?
Has the engine been tested working in the shop? How long at full power?

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

Crankshaft type: Built, semi-built, solid. (State which)
Diameter of journals Diameter of crankpins Centre Breadth of webs at mid-throw Axial thickness of webs
Side Pins Minimum
If shrunk, radial thickness around eyeholes Are dowel pins fitted? Crankshaft material Journals Approved
Webs Tensile strength
Diameter of flywheel Weight Are balance weights fitted? Total weight Radius of gyration
Diameter of flywheel shaft Material Minimum approved tensile strength
Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which)



012888 - 012897 - 0037 1/2

MAIN GAS TURBINES. Name and Type No.

No. of sets of turbines Open or closed cycle BHP per set at RPM of output shaft
 How is drive transmitted to propeller shaft?
 ARRANGEMENT OF TURBINES. HP drives at RPM HP gas inlet temperature pressure
 (A small diagram should be attached showing gas cycle.)
 IP drives at RPM IP gas inlet temperature pressure
 LP drives at RPM LP gas inlet temperature pressure
 No. of air compressors per set Centrifugal or axial flow type? Material of turbine blades Material of compressor blades
 No. of air coolers per set No. of heat exchangers per set How are turbines started?
 How is reversing effected? Are the turbines operated in conjunction with free piston gas generators?
 Total No. of free piston gas generators Diameter of working pistons Diameter of compressor pistons No. of double strokes per minute at full power Gas delivery pressure Gas delivery temperature Have the turbines and attached equipment been tested working in the shop? How long at full power?

ELECTRIC PROPULSION (Reciprocating engines or gas turbines. Electrical particulars to be reported on Form 4d.)

No. of generators KW per generator at RPM AC or DC? Position
 No. of propulsion motors SHP per motor at RPM Position
 How is power obtained for excitation of generators? Motors?

REVERSE REDUCTION GEARING (Reciprocating engines or gas turbines. A small line sketch should be attached showing arrangement of gearing.)

Is gearing of single or double helical type? If single, position of gear thrust bearing Is gearing of epicyclic type?
 PCD of pinions: First reduction Second reduction PCD of wheels: First reduction Main
 Material of pinions Tensile strength Cert. HNO. C. 60/84 Material of wheel rims Tensile strength
 Are gear teeth surface hardened? How are teeth finished? Diameter of pinion journals Wheel shaft journals
 Are the wheels of welded construction? Is gearcase of welded construction? Has the wheel/gearcase been heat treated on completion of welding? Where is the propeller thrust bearing located? In gear box. Are gear bearings of ball or roller type?

CLUTCHES, FLEXIBLE COUPLINGS, ETC. If a clutch or other flexible connection is fitted between engine/turbine and gearing or between engine and line shafting give brief description and, for clutches, state how operated. High Flexible Vulkan EZ Couplings (Rubber in shear type) between engine and reverse gear. In reverse gear hydraulic operated clutch for reverse operation.

Can the main engine be used for purposes other than propulsion when declutched? No. If so, what? DOK M VNR 60/594
 See HNO. C. 60/84 Cert.

STRAIGHT SHAFTING. Diameter of thrustshaft Material Minimum approved tensile strength
 Shaft separate or integral with crank or wheel shaft? In gear box. Diameter of intermediate shaft 115 mm Material See Cert. HAM 60/2265 A.
 Minimum approved tensile strength See HAM Cert. Diameter of screwshaft cone at large end 135 mm Is screwshaft fitted with a continuous liner? No.
 Diameter of tube shaft. (If these are separate shafts) Is tube shaft fitted with a continuous liner in way of stern tube No. Thickness of screwshaft liner at bearings 10 mm at A bkt Thickness between bearings Material of screwshaft SM steel Minimum approved tensile strength 44 Kg/mm²
 Is an approved oil gland fitted? Yes. If so, state type Simplex Length of bearing next to and supporting propeller 670 mm
 Material of bearing LIGNUM VITAE In multiple screw vessels is the liner between stern tube and A bracket continuous? No. If not, is the exposed length of shafting between liners readily visible in dry dock? No sheathed with "Cellon"

PROPELLERS (2) Diameter of propeller 1525 mm Pitch 1602 mm Built up or solid Solid Total developed surface 1,04 m² P 130,9 kg m²
 No. of blades 4 Blade thickness at top of root fillet 51,5 mm Blade material Bronze Moment of inertia of dry propeller 8 127,9 kg m²
 If propeller is of special design, state type Is propeller of reversible pitch type? No. If so, is it of approved design?
 State method of control Material of spare propeller Bronze Moment of inertia 127,8 to 134 kg m²
 One on

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine 3. Eng. Can they be declutched? No
 No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) Attached start diesel gen set (a.s. ER)
 Cap. 32 m³/hr @ 30 kg/cm² delv. press. HAM. 59/3171. 1 Hand Comp. Kiel 60/5526 A.P. E.R.
 No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) See Augsburg 1353. 2-Ford PHD
 1-Aux. aft port (See letter attached) 501

How are receivers first charged? By Ind. Air Comp. on Start Diesel Gen. set battery started or by hand compressor Maximum working pressure of starting air system 30 Kg/cm² Are the safety devices in accordance with the Rules? Yes Has the starting of the main engines been tested and found satisfactory? Yes

COOLERS. No. of main engine fresh water coolers 2 No. of main engine lubricating oil coolers 2

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure All at engine room bott. platform level.
 2-ford p&s 900 L. D.S., Port side bunker sp. 8000 L., cp 5850 L., ap 5800 L., Star side bunker sp. 8000 L. C.S. 5850 L.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) See Augsburg 1353

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	Service for which each pump is connected to be marked thus X															
	SUCTION								DELIVERY							
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed Tanks	Lub. Oil	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling	
Bilge A.P. E.R. Elec. Motor 10m ³ /hr o 15 m.	X	X	X			X										
Fire, Wash Deck & Bilge Elec. Motor. 10m ³ /hr o 15m.	X					X										
L.O. Pump Elec. Motor Ford BHD. E.R. Of Trans. A.S. Eng. Elec. Motor								X			X	X		X		

BILGE SUCTIONS. No. and size in each hold, ~~see tank or pump room~~ 1-2" in chain locker, the 4 dry spaces under accommodation and a 2" connection to each of 4 bilge tanks (separate) taking drains from acc. spaces.
 No. and size connected to main bilge line in main engine room None In tunnel
 In aux. engine room Size and position of direct bilge suction in machinery spaces 1-3" to ME(S) bilge pump f. ctr., 1-2" aft ctr. Size and position of emergency bilge suction in machinery spaces 1-3" ME (p) bilge pump aft ctr. ER.
 Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? No Do the piping arrangements comply with the Rules including special requirements for ships carrying petroleum in bulk cargo oil or classed for navigation in ice? (strike out words not applicable). Yes

STEAM & OIL ENGINE AUXILIARIES

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
A. P. Engine Room	4 SCSA. Oil Engine	Suddeutsche Bremsen A.G.	Augsburg 59/2451 X 3 cyl	Elec. Gen. 30Kw.
A. S. Engine Room	" "	" "	Augsburg 59/2452 X 3 cyl	Elec. Gen. 30Kw. & Air Compressor

Is electric current used for essential services at sea? No. If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea
 Is an electric generator driven by Main Engine? No
 STEAM INSTALLATION. No. of donkey boilers burning oil fuel W.P. Type
 Position
 Is a superheater fitted? Are these boilers also heated by exhaust gas? No. of donkey boilers heated by exhaust gas only? W.P. Type Position
 Can the exhaust heated boilers deliver steam directly to the steam range or do they operate only as economisers in conjunction with oil fired boilers? Port and No. of report on donkey boilers
 Is steam essential for operation of the ship at sea? Are any steam pipes over 3 ins. bore? If so, what is their material?
 For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? No. of oil burning pressure units No. of steam condensers No. of Evaporators
 STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) One electric motor, one pump 2 rem hydraulic Bremen cert. 10295. and hand hydraulic from bridge.
 Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements 2-hydrants with hoses and jet spray nozzles, 7 portable foam extinguishers, 1-9/10 litre foam ext.
 Has the spare gear required by the Rules been supplied? Yes Has all the machinery been tried under full working conditions and found satisfactory? Yes Date and duration of full power sea trials of main engines 22/12/60 8 hours. Does this machinery installation contain any features of a novel or experimental nature? (Give particulars) No.

The foregoing description of the main engine and installation is correct and the particulars are as approved for torsional vibration characteristics by the Bureau Veritas S.A.R.L. P. P. do Administrador-Delegado
 012888-012891-00372/2
 Bureau Veritas Register of Classification

GENERAL REMARKS

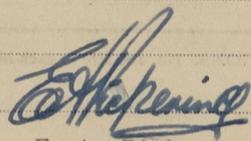
State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and give recommendations for classification, including any special notation to be assigned. Where existing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

This machinery has been installed under Special Survey in accordance with the Rules, approved plans and Secretary's letters.

The materials used and workmanship are good.

It is recommended that the machinery be classed LMC and a notation of Tail shaft with approved oil gland be granted.

Drawings have retained for the sister ship now completing.



E. A. Pickering
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.)

RODS

CRANKSHAFT OR ROTORSHAFT

FLYWHEEL SHAFT

THRUSTSHAFT See below under gearing.

GEARING P&S No. 20109 & 20110 Lloyd's HNO FK 27-1-60.

CH 81266 P 754 LR HNO 8-2-57 2265 WFC HAM 30-5-60 - 1

INTERMEDIATE SHAFTS CH 81631 P 333 LR HNO 21-6-57 2065 WFC HAM 30-5-60 - 3

SCREW AND TUBE SHAFTS Lloyd's HAM 1-4-60 947/60 30/5/60 p&s

PROPELLERS A. No. 94086 Lloyd's HAM 2235/60 18/5/60 WFC ANr. 94080 LR HAM 2234/60 18/5/60 WFC.

OTHER IMPORTANT ITEMS Port & Star Stermtubes, ANr. 94084 Lloyd's HAM TP 4 Kg. WFC 24-5-60 2246 & 7/60.

Is the installation a duplicate of a previous case? No If so, state name of vessel -

Date of approval of plans for crankshaft 17-8-53 Straight shafting 15-12-59 Gearing - Clutch -

Separate oil fuel tanks 1/6/60 Pumping arrangements 16/3/60 15/11/60 Oil fuel arrangements 27/4/60

Cargo oil pumping arrangements - Air receivers - Donkey boilers -

Dates of examination of principal parts:-
 12/9/60
 Fitting of stern tube 29/9/60 Fitting of propeller 29/9/60 Completion of sea connections 20/10/60 Alignment of crankshaft in main bearings 23/11/60

Engine checks & bolts 23/11/60 Alignment of gearing 16/11/60 Alignment of straight shafting 16/11/60 Testing of pumping arrangements 23/12/60

Oil fuel lines 2/12/60 Donkey boiler supports - Steering machinery 22/12/60 Windlass 22/12/60

Date of Committee FRIDAY 12 MAY 1961 Special Survey Fee 11,287.00

Decision +LMC ES) 09) 1.61

Expenses 2,202.00



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Date when A/c rendered 23/3/61

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