

Rpt. 4b

Date of writing report 28.11.60 Received London Port Piraeus No. 8813
Survey held at Piraeus No. of visits In shops 16 First date 23.6.60 Last date 27.10.60
On vessel

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. 90642 Name S.S. "MANDO" Gross tons
Owners Michael Pyliaros, Fotius Managers Port of Registry Piraeus
Tziakos & Others
Hull built at Stockholm By A/B Finnboda Varf Year Month
Main Engines made at Troll Hattan By Nydqvist & Holm A-B Yard No. 312 When 1930-5
Gearing made at By Eng. No. 1605 When 1960-5
Donkey boilers made at By Blr. Nos. When
Machinery installed at Piraeus By John Constantineas When 1960-10

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? No. Is ship intended to carry petroleum in bulk? No.
Is refrigerating machinery fitted? Yes. If so, is it for cargo purposes? No. Type of refrigerant
Is the refrigerating machinery compartment isolated from the propelling machinery space? Yes. Is the refrigerated cargo installation intended to be classed? No.

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 One No. of propellers One Brief description of propulsion system Main Engine, Straight Shafting & Ordinary Prop.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Nohab type ML - 5

No. of cylinders per engine 5 Dia. of cylinders 345 mm. stroke(s) 580 mm. 2 or 4 stroke cycle 2 Single or double acting Single

Maximum approved BHP per engine 840 at 280 RPM of engine and 280 RPM of propeller.

Corresponding MIP (For DA engines give MIP top & bottom) Maximum cylinder pressure Machinery numeral

Are the cylinders arranged in Vee or other special formation? 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? 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 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? 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? 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? 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? 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

If shrunk, radial thickness around eyeholes Are dowel pins fitted? Crankshaft material Journals Pins Minimum

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)

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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?

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 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? 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

Can the main engine be used for purposes other than propulsion when declutched? If so, what?

STRAIGHT SHAFTING. Diameter of thrustshaft As original Material Minimum approved tensile strength
 Shaft separate or integral with crank or wheel shaft? Diameter of intermediate shaft Material
 Minimum approved tensile strength Diameter of screwshaft cone at large end Original Is screwshaft fitted with a continuous liner?
 Diameter of tube shaft. (If these are separate shafts) Is tube shaft fitted with a continuous liner in way of stern tube Thickness of screw/tube shaft liner at bearings
 Thickness between bearings Material of screw/tube shaft Minimum approved tensile strength
 Is an approved oil gland fitted? Yes. If so, state type Original Length of bearing next to and supporting propeller
 Material of bearing In multiple screw vessels is the liner between stern tube and A bracket continuous? If not, is the exposed length of shafting between liners readily visible in dry dock?

PROPELLER. Diameter of propeller 2100 mm. Pitch 1300 mm. Built up or solid SOLID Total developed surface
 No. of blades 3 Blade thickness at top of root fillet 75 mm. Blade material C.I. Moment of inertia of dry propeller 1125 kgs x m²
 If propeller is of special design, state type No. Is propeller of reversible pitch type? No. If so, is it of approved design?
 State method of control Coupled direct to main engine Material of spare propeller None. Moment of inertia

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine One. Can they be declutched? No.
 No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) One, Capacity stated 500 litres per minute, electric motor driven, S.Side ER.
 No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Main:- 1-800 litres Stockholm No.6954
1-1000 litres Gothenburg Cert.No.27710 - Auxiliary Two off- Ruston Hornsby. Capacity estimated 400 litres. No Certificates. 20 ATS Auxiliary
 How are receivers first charged? Independent Compressor Maximum working pressure of starting air system 25 ATS Main 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 None. No. of main engine lubricating oil coolers One.

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure One forward at ER flat

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) 1 Bilge, 1 Water, & 2 Lubricating Oil Pumps.

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
35 cu.mtrs/hr Ballast & Bilge Pump(p.s.aft ER).	X	X	X			X				X			X	
50 cu.mtrs/hr.Ballast & Bilge p.s. fwd. ER.	X		X			X				X			X	
Ind.Compressor Cooling Pump						X				X				

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room 2 off 2 1/2" each hold.

No. and size connected to main bilge line in main engine room 2 off 3" i.e. 1-3" p.s. aft 1-3" s.side aft In tunnel Two 2 1/2"

In aux. engine room Not applicable Size and position of direct bilge suction in machinery spaces 1-P.Side 3"

Size and position of emergency bilge suction in machinery spaces 1-S.Side 3"

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 (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)
Port	Size 3 Class VCR	Ruston Hornsby	None.	60 kw.
Stbd.	Size 3 Class VCR	" "	None.	60 kw.
Upper Aft ER	SL3	Lister Dursley	None.	6.7 kw.

Is electric current used for essential services at sea? Yes. If so, state the minimum No. and capacity of generators required in order that the ship may operate

at sea one of 3 kw. 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

boiler? 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 hand hydraulic

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes. Brief description of arrangements One 2 1/2" connection with hose

3-2 gall foam 3 x 25 kgs CO₂

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 2.10.60 3 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 (strike out words not applicable).

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.

The Machinery has been installed partly in accordance with the Rules, approved plans and Secretary's letters. The material & workmanship found good & items not covered by Lloyds Certificates & tests were opened out and examined. The main engine has been tried under working conditions at sea and behaved satisfactorily. The auxiliary machinery has been tried and found to be satisfactorily.

However, (1). The bilge pumping of the forward ballast and bilge pump was found to be not very efficient, and it is considered that the cause could be due to acute bends in the pump suction line.

(2). The provision for first charging the air receivers is not efficient as the emergency generator has not enough power to operate the independent compressor at full load.

It is recommended that a notation of +LMC "Class Contemplated" be made, subject to (1) efficient provision being made for first charging the air receivers and (2) bilge pumping of the forward ballast and bilge pump being re-examined and dealt with as found necessary on the vessel's return to Piraeus (about the end of November, 1960).

Philip J. S. Blakenham
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 Please see Got. Rpt. 4b No. 26015

CRANKSHAFT OR ROTORSHAFT Please see Got. Rpt. 4b No. 26015

FLYWHEEL SHAFT -

THRUSTSHAFT -

GEARING -

INTERMEDIATE SHAFTS -

SCREW AND TUBE SHAFTS -

PROPELLERS No identification marks (plan enclosed).

OTHER IMPORTANT ITEMS

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

Date of approval of plans for crankshaft	Straight shafting	Gearing	Clutch	Oil fuel arrangements	27.10.60
Separate oil fuel tanks	20.10.60	Pumping arrangements	27.10.60	Donkey boilers	None.
Cargo oil pumping arrangements	None.	Air receivers	For main sec. Got. Rpt. 4b		
Dates of examination of principal parts:-					
Fitting of stern tube	-	Fitting of propeller	17.9.60	Completion of sea connections	-
Engine chocks & bolts	16.9.60	Alignment of gearing	-	Alignment of straight shafting	16.9.60
Oil fuel lines	2-10-60	Donkey boiler supports	-	Steering machinery	2-10-60
				Windlass	2-10-60
				Special Survey Fee	£ 63. 0. 0
Date of Committee					
Decision					

See Pi 8839

Date when A/c rendered

7.1.61.



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