

Rpt. 4b

18 JAN 1961

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

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

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

If shrunk, radial thickness around eyeholes Are dowel pins fitted? Crankshaft material Journals Approved Tensile strength 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)

PLEASE SEE GOTHENBURG RPT. No. 26015



004534-004540-0063

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 | Piston Cooling | Overboard & Ballast |
| 35 cu.mtrs/hr Ballast & Bilge Pump (p.s.aft ER). | X | X | X | | | X | | | | X | | | X | | | X |
| 50 cu.mtrs/hr. Ballast & Bilge p.s. fwd. ER. | X | | 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 in full

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 hose & spray nozzle.

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).



"MANDO"

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 -

Separate oil fuel tanks 20.10.60 Pumping arrangements 27.10.60 Oil fuel arrangements 27.10.60

Cargo oil pumping arrangements None. Air receivers For main sec. Got. Rpt. 4b Donkey boilers None.

Dates of examination of principal parts:-

Fitting of stern tube - Fitting of propeller 17.9.60 Completion of sea connections - Alignment of crankshaft in main bearings -

Engine chocks & bolts 16.9.60 Alignment of gearing - Alignment of straight shafting 16.9.60 Testing of pumping arrangements 27.10

Oil fuel lines 2-10-60 Donkey boiler supports - Steering machinery 2-10-60 Windlass 2-10-60

Date of Committee - Special Survey Fee £ 63. 0. 0

Decision See Pi 8839

Date when A/c rendered 7.1.61.



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