

**Rpt. 4b**

Date of writing report 29.4.60. Received London LONDON Port LONDON No. 142598.  
 Survey held at Dartford Kent No. of visits 5 In shops 20.5.59. Last date 6.7.59.  
 On vessel 14. First date 3.4.59. Last date 28.4.60.

**FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY**

No. in R.B.                      Name OIL BARGE "CHARMO" Gross tons                       
 Owners Charrington, Gardner & Lockett Ltd. Port of Registry LONDON Year Month                       
 Hull built at Dartford, Kent By Charrington, Gardner & Lockett Ltd. Card No. NC 148 When 1960. 4  
 Main Engines made at Stamford - Lincs By Blackstone & Co. Ltd., Eng. No. EVS4.P.59E.142 When 1959. 7  
 Gearing made at Slough Bucks By Modern Wheel Drive Ltd.,  
 Donkey boilers made at None By                      Blr. Nos.                      When                       
 Machinery installed at Dartford Kent By Cunis & Co. Woolwich When 1960  
 Particulars of restricted service of ship, if limited for classification A1 OIL BARGE "CARRYING OIL FUEL FP ABOVE 150°F RIVER THAMES SERVICE

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? Yes FP ABOVE 150°F.  
 Is refrigerating machinery fitted? No 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 2 No. of propellers 1 Brief description of propulsion system 2 NO. REVERSING OIL ENGINES DRIVING ONE SCREW SHAFT THROUGH MWD OIL OPERATED MARINE REVERSE GEARBOX 2.5:1 RATIO  
**MAIN RECIPROCATING ENGINES.** Licence Name and Type No. LISTER-BLACKSTONE TYPE EVSMGR4 GEARBOX 2.5:1 RATIO  
 No. of cylinders per engine 4 Dia. of cylinders 8 3/4 Stroke(s) 11 1/2 2MWR SIZE 3' 4" Single or double acting single  
 Maximum approved BHP per engine 248 at 600 RPM of engine and 240 RPM of propeller  
 Corresponding MIP 146 P.S.I. (Pop DA engines give MIP top & bottom) Maximum cylinder pressure 940 P.S.I. Machinery numeral 5 = 99

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?                     

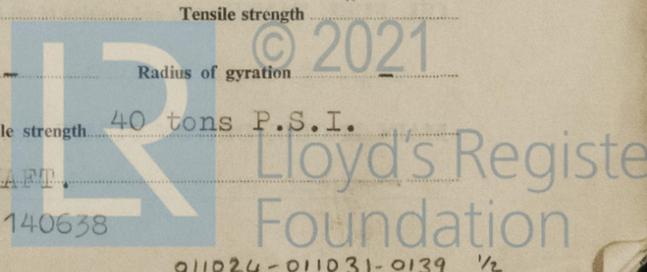
**FOUR STROKE ENGINES.** Is the engine supercharged? Yes Are the undersides of the pistons arranged as supercharge pumps? No No. of exhaust gas driven blowers per engine 1 No. of supercharge air coolers per engine                      Supercharge air pressure 4.5/5.5 P.S.I. Can engine operate without supercharger? Yes

**TWO & FOUR STROKE ENGINES-GENERAL.** No. of valves per cylinder: Fuel 1 Inlet 1 Exhaust 1 Starting 2 in Series 1 Safety 1  
 Material of cylinder covers Cast iron Material of piston crowns Alumun Alloy Is the engine equipped to operate on heavy fuel oil? No  
 Cooling medium for: Cylinders Fresh water Pistons None Fuel valves None Overall diameter of piston rod for double acting engines                       
 Is the rod fitted with a sleeve?                      Is welded construction employed for: Bedplate? No Frames? No Entablature? No Is the crankcase separated from the underside of pistons? No Is the engine of crosshead or trunk piston type? Trunk Total internal volume of crankcase 30 cu. ft. No. and total area of explosion relief devices 2.22" Are flame guards or traps fitted to relief devices? Yes 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? Built up seating How is the engine started? compressed air  
 Can the engine be directly reversed? No If not, how is reversing obtained MWD 2MWR SIZE 3A REVERSE REDUCTION GEARBOX

Has the engine been tested working in the shop? Yes How long at full power? 5 1/2 Hours  
**CRANK & FLYWHEEL SHAFTING.** Date of approval of torsional vibration characteristics of the propelling machinery system 1.6.59. State barred speed range(s), if imposed for working propeller None For spare propeller                      Is a governor fitted? Yes Is a torsional vibration damper or detuner fitted to the shafting? Yes  
 Where positioned? Aft next to Flywheel Type Bonded Rubber No. of main bearings 5 Are main bearings of ball or roller type? No Distance between inner edges of bearings in way of crank(s) 10 1/16 Distance between centre lines of side cranks or eccentrics of opposed piston engines                     

Crankshaft type: Built, semi-built, solid. (State which) SOLID  
 Diameter of journals 6 3/4 Diameter of crankpins                      Centre 6 1/2 Breadth of webs at mid-throw 7 3/4 Axial thickness of webs 2 25/32  
 If shrunk, radial thickness around eyeholes                      Are dowel pins fitted?                      Crankshaft material EN8 STEEL Pins                      Minimum 40 tons P.S.I.  
 Diameter of flywheel 40" Weight 2180 lbs Are balance weights fitted? No Total weight                      Radius of gyration                       
 Diameter of flywheel shaft 6 3/4 Material EN8 STEEL Minimum approved tensile strength 40 tons P.S.I.  
 Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) INTEGRAL WITH CRANKSHAFT

FOR PARTICULARS OF MAIN ENGINE SEE LONDON REPORT NO. 140638



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.) LONDON CERT MWD 1969

Is gearing of single or double helical type? SINGLE If single, position of gear thrust bearing thrust block End of bearings main Is gearing of epicyclic type? No

PCD of pinions: First reduction 13.0013" Second reduction \_\_\_\_\_ PCD of wheels: First reduction 32.0217" Main \_\_\_\_\_

Material of pinions BS EN 25 Tensile strength 55/65 tons/sq.in Material of wheel rims BS EN 9 Tensile strength 50/55 tons

Are gear teeth surface hardened? No How are teeth finished? Generated Diameter of pinion journals 4" & 4.5" Wheel shaft journals 6" & 6.5"

Are the wheels of welded construction? No Is gearcase of welded construction? No Has the wheel/gearcase been heat treated on completion of welding? \_\_\_\_\_

Where is the propeller thrust bearing located? OUTPUT SHAFT INTEGRAL WITH GEAR CASING Are gear bearings of ball or roller type? No

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. RUBBER BONDED FLEXIBLE COUPLING BETWEEN ENGINE & GEARBOX

Can the main engine be used for purposes other than propulsion when declutched? Yes If so, what? DRIVING CARGO PUMPS AT FORWARD END THROUGH

STRAIGHT SHAFTING. Diameter of thrust shaft 6.5" Material STEEL Minimum approved tensile strength 28 tons/sq.in

Shaft separate or integral with crank or wheel shaft? Integral with gearbox Diameter of intermediate shaft 5" Material STEEL

Minimum approved tensile strength 28 tons/sq.in Diameter of screw shaft cone at large end 6" Is screw shaft 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? \_\_\_\_\_ Thickness of screw/tube shaft liner at bearings \_\_\_\_\_

Thickness between bearings \_\_\_\_\_ Material of screw shaft STEEL Minimum approved tensile strength 28 tons/s

Is an approved oil gland fitted? Yes If so, state type NEWARK Length of bearing next to and supporting propeller 25"

Material of bearing WHITE METAL 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 6'-6" Pitch 6'-7" Built up or solid SOLID Total developed surface 2280 sq.ins.

No. of blades 4 Blade thickness at top of root fillet 2.5" Blade material PHOSPHOR BRONZE Moment of inertia of dry propeller \_\_\_\_\_

Is propeller 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 NONE Moment of inertia \_\_\_\_\_

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine ONE Can they be declutched? YES. BELT DRIVEN FROM ST

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) One compressor 2.5 cubic feet free

air/Min driven by 30BHP Lister Blackstone Auxiliary Engine. Through Clutch. Situated in engine

port side lower platform level

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Two main each 11.25 cubic feet

situate engine room lower platform level Star: side forward. Leed Certs No's C.35295 & C.35

compressor attached to Aux

How are receivers first charged? oil eng. Hand start. Maximum working pressure of starting air system 350 P.S.I. 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 One No. of main engine lubricating oil coolers Two

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure Two - One port and one Starboard

Top of engine room

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) On each engine 2 lubricating oil - pressure - 1 scavenge

1 - fresh water and 1 - ra water

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, ballast & fire pump power driven by 33 BHP oil engine Pump capacity 250 gals/min	X	X	X			X							X		
Bilge, ballast & fire pump port side ER belt driven from port main eng capacity 100gals/min	X	X	X			X							X		
Ballast pump fire & store driven by hyd. motor				X		X									

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room. None Fire buffer 1-3" hand pts. on plan

No. and size connected to main bilge line in main engine room 1-2" Dia: forward end In tunnel \_\_\_\_\_

In aux. engine room \_\_\_\_\_ Size and position of direct bilge suction in machinery spaces 1-3" dia aft end

Size and position of emergency bilge suction in machinery spaces \_\_\_\_\_

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, one of or classed for navigation? Yes (strike out words not applicable)

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 side	Lister HA3 type	Lister	Bristol Rpts 10	1-10KW Generator
Engine Room	30 BHP	Blackstone Marine Ltd.	NSC8429	1-Bilge pump 1-Hydraulic pump 4-Compressor
				Note! hydraulic pump & compressor belt driven

Is electric current used for essential services at sea? Yes (Steering) If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea. The 10KW generator ample power

Is an electric generator driven by Main Engine? Yes

STEAM INSTALLATION. No. of donkey boilers burning oil fuel None 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 3 cylinder hydraulic pump driven by 4 1/2 H.P. Elec: motor. Gear cross connected to 2-6 cyl. pumps (1 on main & 1 on aux engine)

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements 1-3" hydrant in engine room

1-2 1/2 port & 1-2 1/2 star hydrant on deck. Seven 2 gal foam extinguishers distributed (2 in engine room)

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 trials of main engines 28.4.60. 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 approved for torsional vibration characteristics (strike out words not applicable).

CHARRINGTON GARDNER LOCKET (LONDON) LTD.

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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.

London Report No. 140638 refers

The machinery of this vessel, constructed under Special Survey has been satisfactorily installed on board under Special Survey in accordance with Rule Requirements, Approved Plans and Secretary's letters.

The quality of the materials and workmanship is good.

The machinery has been examined under full working conditions during River Trials and found to operate satisfactorily.

During River Trials no gear hammer was observed at steady ahead speeds.

In my opinion the machinery is eligible to be classed with the record of +LMC 4.60, subject to the defective stern tube now temporarily repaired being renewed before the end of October, 1960 and notation TS OG - Oil Engine - Mchy aft

For particulars of stern tube see MANCHESTER CERT. No. C.5861

*A. Kirby*

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 See London Rpt. No. 140638

CRANKSHAFT ~~OR MOTOR SHAFT~~ See London Report No. 140638

FLYWHEEL SHAFT Integral with Crankshaft.

THRUSTSHAFT Integral with reduction gearbox

GEARING MWD No: 12288 Ratio 2½:1

London Cert. No. MWD 1969

INTERMEDIATE SHAFTS 2- 30.4.59. JWC

Manchester Cert No. C.5861 ✓

SCREW AND TUBE SHAFTS 30.4.59. JWC

" " No. C.5861 ✓

PROPELLERS LLOYDS No. 58906 G.H.M

Glasgow No. C.58906 ✓

OTHER IMPORTANT ITEMS SEE London Report No. 140638

PLANS ATTACHED. 1. Bilge Ballast & Vent Arrangement Plan No.280.

2. Screwshaft.

3. Daily Service Tank Plan No.291.

Is the installation a duplicate of a previous case? No

If so, state name of vessel

Date of approval of plans for crankshaft 1.6.59.

Straight shafting 23.7.59.

Gearing 3.12.58.

Clutch -

Separate oil fuel tanks

Pumping arrangements 29.7.59.

Oil fuel arrangements 29.7.58.

Cargo oil pumping arrangements 30.6.59.

Air receivers 30.4.59.

Donkey boilers -

Dates of examination of principal parts:-

Fitting of stern tube 23.12.59.

Fitting of propeller 23.12.59.

Completion of sea connections 6.1.60.

Alignment of crankshaft in main bearings 6.1.60.

Engine chocks & bolts 6.1.60.

Alignment of gearing 6.1.60.

Alignment of straight shafting 6.1.60.

Testing of pumping arrangements 4.4.60.

Oil fuel lines 23.12.59.

Donkey boiler supports -

Steering machinery 28.4.60.

Windlass 28.4.60.

Date of Committee

FRIDAY 17 JUN 1960

Special Survey Fee 20-0-0d.

Decision

See Rpt. 1

Instn of machy £25.0.0.

Expenses £3-0-0d.

Date when A/c rendered

20 MAY 1960



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