

Rpt. 4b

Date of writing report ... Received London ... Port SUNDERLAND ... No. A38 2 MAY 1961 ... Survey held at SUNDERLAND ... No. of visits ... In shops ... On vessel 25 ... First date 17th SEPTEMBER 1960 ... Last date 28th MARCH 1961

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. 11111 Name M.V. MONTROSE Gross tons 1993 ... Owners MESSRS MONTSHIP LINES LTD. Managers BURIES MARKES LTD. Port of Registry LONDON ... Hull built at SUNDERLAND By BARTRAM & SONS LTD. Yard No. 386 Year Month 1961. 3 ... Main Engines made at WALLSEND By NORTH EASTERN MARINE ENGINEERING CO. LTD. Eng. No. 3414 When 1961. 3 ... Gearing made at WEST HARTLEPOOL 3 By W. GRAY & CO. LTD. CENTRAL MARINE ENG. WORKS. R471 (SPANNER J3081) 1960. 9 ... AUX boilers made at ANNAN By COCHRAN & CO (ANNAN) LTD. Blr. Nos. 22357 When 1960. 8 ... Machinery installed at SUNDERLAND By GEORGE CLARK (SUNDERLAND) LTD. When 1961. 3

Particulars of restricted service of ship, if limited for classification NONE ... Particulars of vegetable or similar cargo oil notation, if required NONE ... 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? YES ... Type of refrigerant DICHLORODIFLUOROMETHANE ... Is the refrigerating machinery compartment isolated from the propelling machinery space? YES ... Is the refrigerated cargo installation intended to be classed? YES

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 DIRECT COUPLED HEAVY OIL ENGINE.

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 ... RPM of engine and ... 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?

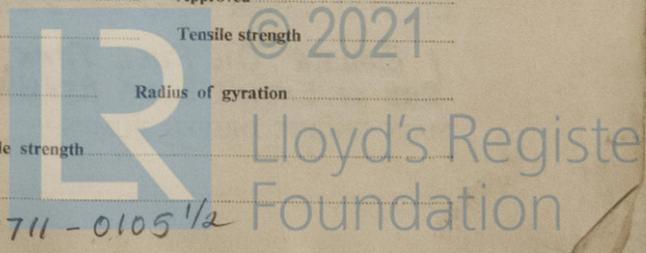
Where positioned? ... Type ... No. of main bearings ... Are main bearings of ball or roller type? ... Distance between inner edges of bearings in way of crank(s) ... Distance between centre lines of side cranks or eccentrics of opposed piston engines

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 ... 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)

NEWCASTLE REPORT No. 11725

4/8/60 17/5/61 KP2A



014704 - 014711 - 0105 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? _____

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 _____ 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 _____ 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? _____ If so, state type _____ Length of bearing next to and supporting propeller _____
 Material of bearing _____ In multiple screw shafts 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 _____ Pitch _____ Built up or solid _____ Total developed surface _____
 No. of blades _____ Blade thickness at top of root fillet _____ Blade material _____ Moment of inertia of dry propeller _____
 If propeller is of special design, state type _____ Is propeller of reversible pitch type? _____ If so, is it of approved design? _____
 State method of control _____ Material of spare propeller _____ Moment of inertia _____

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine _____ Can they be declutched? _____

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) _____
MOTOR DRIVEN. STABOARD SIDE BOTTOM E.R. PLATFORM. SOUTHAMPTON CERTS. D1601/R
 No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) _____
2 MAIN AIR RECEIVERS - TOP AFT END OF ENGINE ROOM - NEWCASTLE C 72040. 1 AUX. REC. STAR SIDE BOTTOM PLATFORM. MANCHESTER CERTIFICATE No. 01258.
 How are receivers first charged? **HAND OPERATED COMPRESSOR** Maximum working pressure of starting air system _____ 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 _____ No. of main engine lubricating oil coolers _____

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure _____
3 HEAVY OIL FUEL SETTLING TANKS, 1 BOILER OIL FUEL TANK, 2 DIESEL OIL SETTLING TANKS, 2 OIL FUEL BUNKERS. FOR END OF ENGINE ROOM ATWARTSHIPS.
 MAIN ENGINE DRIVEN PUMPS (No. and Purpose) _____ **NONE**

SEE NEWCASTLE REPORT No. 11725

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	Oil	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling
ELECTRICALLY DRIVEN															
SEA WATER. PORT SIDE BOTTOM PLAT. PORT SIDE FOR						X				X					
FRESH WATER (2). BOTTOM PLAT. PORT SIDE AFT					X						X				
LUB. OIL (2). BOTT. PLATFORM									X					X	
BALLAST. PORT SIDE BOTT. PLATFORM	X	X	X			X				X					
BILGE. PORT SIDE BOTT. PLATFORM	X	X				X							X		
GENERAL SERVICE. BOTT. PLAT. PORT FOR	X	X	X			X							X		
BOILER FEED (2). BOTT. PLAT. STAR FOR							X			X	X				
AUX. FRESH WATER. BOTT. PLAT. FOR END STAR					X										
FUEL OIL TRANSFER. BOTT. PORT FOR					X							X			
FUEL OIL SERVICE. BOTT. PLAT. FOR STAR					X								X		
DIESEL OIL TRANSFER. BOTT. PLAT.					X							X			
DIESEL OIL FUEL VALVE COOLING (2).					X										

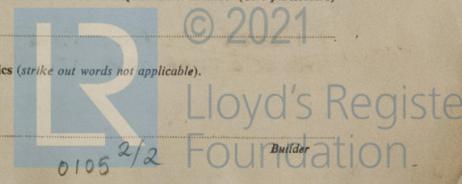
BILGE SUCTIONS. No. and size in each hold, deep tank or pump room. **NO. 1 HOLD - 4 @ 3". NO. 2 HOLD - 2 @ 3 1/2". NO. 3 HOLD - 2 @ 3". COFFERDAM - 2 @ 3"**
PIPE TUNNEL - 2 @ 2 1/2". DEEP TANK - 4 @ 2 1/2". NO. 4 HOLD - 2 @ 2 1/2". D.B. COFFERDAM - 1 @ 2 1/2". HOLD WELL - 1 @ 3". TONNAGE WELL - 2 @ 2"
 No. and size connected to main bilge line in main engine room **4 @ 3" AND 2 @ 2"** In tunnel **1 @ 3"**
 Size and position of direct bilge suction in machinery spaces **PORT SIDE 1 @ 3" AND 1 @ 3". SS**
 Size and position of emergency bilge suction in machinery spaces **1 - 1 1/2" PORT SIDE**
 Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? **YES** Do the piping arrangements comply with the Rules **YES**
 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)
BOTTOM E.R. PLATFORM	4-B.C.S.A. OIL ENGINE			
STAR FOR OUTBOARD	EVOMAG	BLACKSTONE & CO	LONDON No. 144074	275 KW. D.C. GENERATOR
STAR FOR INBOARD	"	"	"	"
STAR AFT INBOARD	"	"	"	"

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 @ 275 KW.** Is an electric generator driven by Main Engine? **NO**
 STEAM INSTALLATION. No. of ^{Aux.} boilers burning oil fuel **1** W.P. **100 PSIG** Type **COCHRAN VERTICAL**
 Position **PORT SIDE FOR BOTTOM ENGINE ROOM PLATFORM**
 Is a superheater fitted? **NO** Are these boilers also heated by exhaust gas? **NO** No. of ^{Aux.} boilers heated by exhaust gas only? **1** W.P. **100 PSIG**
 Type **SPANNER** Position **IN FUNNEL CASING AT BOAT DECK** 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? **ONLY AS AN ECONOMISER** Port and No. of report on **AUX. COCHRAN BLR. - GLASGOW No. 9489**
 boilers **SPANNER BLR. - W. HARTLEPOOL 2048** Is steam essential for operation of the ship at sea? **YES** Are any steam pipes over 3 ins. bore? **NO** If so, what is their material? _____ For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? **YES** No. of oil burning pressure units _____ No. of steam condensers **DRAINS COLLECTOR** No. of Evaporators **NONE**
 STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars.) **1 - HASTIE ELECTRIC HYDRAULIC GEAR No. H.G. 8087/8. 2 RAMS. 2 HELE SHAW PUMPS No. K1260/1. 2 ELECTRIC MOTORS Nos. 3030922/3.**
 Have the Rule Requirements for fire extinguishing arrangements been complied with? **YES** Brief description of arrangements **9 - 2 GALL. PORTABLE FOAM; 1 - 10 GALL. FOAM; 1 - 34 GALL. FOAM; 1 - SANDBIN; 2 - 2 1/2 FIREMAIN CONNECTIONS; CO2 SMOOTHERING SYSTEM.**
 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 **27-3-61** Does this machinery installation contain any features of a novel or experimental nature? (Give particulars) **NONE**

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 of this vessel has been constructed and installed under Special Survey, in accordance with the Rules, approved plans and the Secretary's letters. The materials and workmanship are good. The machinery has been securely fitted on board the vessel and tested under full working conditions, with satisfactory results.

The auxiliary boilers have also been securely fixed on board and the safety valves adjusted under steam to a pressure of 100 lb/sq" and tested for accumulation and found satisfactory. The requirements of the Rules, Chapter E, Section 3 have been complied with.

The machinery is eligible, in my opinion, to be classed in the Register Book with the record of + L.M.C. 3, 61; T.S(O.G) 3, 61 and 2-AB 100 lb/sq" 3, 61.

The main engine is not to be operated continuously between 40 and 60 R.P.M.

F. Wilson

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

GEARING

INTERMEDIATE SHAFTS

SCREW AND TUBE SHAFTS

PROPELLERS

OTHER IMPORTANT ITEMS

SEE NEWCASTLE CERTIFICATE No. 117725

Is the installation a duplicate of a previous case? **No**

Use, state name of vessel

Date of approval of plans for crankshaft **23-5-60** Straight shafting **4-8-60** Gearing **4-8-60** Clutch **4-8-60**

Separate oil fuel tanks **11-5-60** Pumping arrangements **11-11-60** Oil fuel arrangements **11-11-60**

Cargo oil pumping arrangements **7-9-60** Air receivers **19-7-60** Donkey boilers **7-9-60**

Dates of examination of principal parts:-

Fitting of stern tube **18-9-60** Fitting of propeller **21-9-60** Completion of sea connections **21-9-60** Alignment of crankshaft in main bearings **20-2-61**

Engine checks & bolts **20-2-61** Alignment of gearing **20-1-61** Alignment of straight shafting **20-1-61** Testing of pumping arrangements **27-3-61**

Oil fuel lines **9-2-61** ^{AUX.} boiler supports **17-3-61** Steering machinery **27-3-61** Windlass **27-3-61**

FRIDAY 23 JUN 1961

Date of Committee **23 JUN 1961** Special Survey Fee **£166 : 5 : 0**

Decision **+ L.M.C.** INSTALLATION **£166 : 5 : 0**

Expenses

2 Aux 100 Gs
3.61 } T.S(O.G)

Date when A/c rendered 27 APR 1961



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Various Certs. as per list.