

## Rpt. 4b

Date of writing report 25/6/59 Received London \_\_\_\_\_ Port Spewich No. 140302  
 Survey held at Wivenhoe No. of visits \_\_\_\_\_ In shops \_\_\_\_\_ First date 27/2/59 Last date 30/5/59  
 On vessel 18

## FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. \_\_\_\_\_ Name MOTOR BARGE "BLACKMARTIN C" Gross tons 141  
 Owners Jas. W. Cook & Co. Ltd. Managers \_\_\_\_\_ Port of Registry Stull  
 Hull built at Wivenhoe, Essex By Jas. W. Cook & Co. (Wivenhoe) Ltd. Yard No. 1186 Year Month 1959-5  
 Main Engines made at Stamford, Lincs. By Blackstone & Co. Ltd. Eng. No. 86072 When 1959-1  
 Gearing made at Slough, Bucks. By Modern Wheel Drive Ltd. Blr. Nos. 20327 When 1959-3  
 Donkey boilers made at London By J. Stone & Co. (Deptford) Ltd. Machinery installed at Wivenhoe By Jas. W. Cook & Co. (Wivenhoe) Ltd. When 1959-5  
 Particulars of restricted service of ship, if limited for classification For service in Humber River & Estuary.  
 Particulars of vegetable or similar cargo oil notation, if required Carrying oil in bulk, flash point above 150°F  
 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 1 No. of propellers 1 Brief description of propulsion system Oil engine, reverse, reduction gearing to single screw.  
**MAIN RECIPROCATING ENGINES.** Licence Name and Type No. Lister Blackstone EVMGR4 vertical diesel.  
 No. of cylinders per engine 4 Dia. of cylinders 8 3/4" stroke(s) 11 1/2" 2 or 4 stroke cycle 4 Single or double acting SA  
 Maximum approved BHP per engine 180 at 600 RPM of engine and 300 RPM of propeller.  
 Corresponding MIP 106 lb. (For DA engines give MIP top & bottom) Maximum cylinder pressure 800 lb. Machinery numeral 36  
 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 None No. of supercharge air coolers per engine None Supercharge air pressure \_\_\_\_\_ Can engine operate without supercharger? \_\_\_\_\_  
**TWO & FOUR STROKE ENGINES—GENERAL.** No. of valves per cylinder: Fuel 1 Inlet 1 Exhaust 1 Starting 2 in benzine Safety 1  
 Material of cylinder covers Cast iron Material of piston crowns Alum. 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? No 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 c.ft. No. and total area of explosion relief devices 2-22 sq. ins 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 seat. How is the engine started? Compressed air  
 Can the engine be directly reversed? No If not, how is reversing obtained? Reverse-reduction gear-box  
 Has the engine been tested working in the shop? Yes How long at full power? \_\_\_\_\_  
**CRANK & FLYWHEEL SHAFTING.** Date of approval of torsional vibration characteristics of the propelling machinery system 22/6/59 for higher propeller 23/12/58 431 V for longer propeller State barred speed range(s), if imposed \_\_\_\_\_  
 Working propeller None For spare propeller None Is a governor fitted? Yes Is a torsional vibration damper or detuner fitted to the shafting? Yes  
 Where positioned? In flywheel coupling Type Viscous No. of main bearings 6 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 forged  
 Diameter of journals 6 3/4" Diameter of crankpins Centre 6 1/8" Side \_\_\_\_\_ Breadth of webs at mid-throw 7 3/4" Axial thickness of webs 2 23/32"  
 If shrunk, radial thickness around eyeholes \_\_\_\_\_ Are dowel pins fitted? \_\_\_\_\_ Crankshaft material Journals En 8. Steel Minimum \_\_\_\_\_ Approved 40 tons/sq. in. Tensile strength \_\_\_\_\_  
 Diameter of flywheel 40" Weight 2180 lb. Are balance weights fitted? No Total weight \_\_\_\_\_ Radius of gyration \_\_\_\_\_  
 Diameter of flywheel shaft 6 3/4" Material \_\_\_\_\_ Minimum approved tensile strength 40 tons/sq. in.  
 Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Integral with crankshaft.

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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? Single. If single, position of gear thrust bearing. Main thrust. Is gearing of epicyclic type? No.

PCD of pinions. First reduction. 8.6875". Second reduction. 7.9422". PCD of wheels. First reduction. 16.131". Main. 16.131".

Material of pinions. En 25. later En 9. Tensile strength. 55/65 tons/in. Material of wheels. En 9. Tensile strength. 45/55 tons.

Are gear teeth surface hardened? No. How are teeth finished? Sykes cut. Diameter of pinion journals. 3.937 3/4". Wheel shaft journals. 4 1/2".

Are the wheels of welded construction? No. Is gearcase of welded construction? No. Has the wheel/gearcase been heat treated on completion of welding? No. Where is the propeller thrust bearing located? Output shaft integral in gear box. Are gear bearings of ball or roller type? Yes, both Sykes.

## CLUTCHES, FLEXIBLE COUPLINGS, ETC. If a clutch or other flexible connection is fitted between engine/turbine and gear 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? No. If so, what? Output shaft integral in gear box.

## STRAIGHT SHAFTING. Diameter of thrust shaft. 4 1/2". Material. as wheel shaft. Minimum approved tensile strength.

Shaft separate or integral with crank or wheel shaft? integral with wheel shaft. Diameter of intermediate shaft. None. Material.

Minimum approved tensile strength. Diameter of screw shaft cone at large end. 4 1/4". Is screw shaft fitted with a continuous liner? No.

Diameter of tube shaft. (If these are separate shafts) None. Is tube shaft fitted with a continuous liner in way of stern tube. Thickness of screw/tube shaft liner at bearings.

Is an approved oil gland fitted? Yes. If so, state type. "Brunner". Length of bearing next to and supporting propeller. 18 3/8".

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. 52". Pitch. 40". Built up or solid. Built up. Total developed surface. 1295 sq. ins.

No. of blades. 4. Blade thickness at top of root fillet. 1 1/2". Blade material. Bronze. Moment of inertia of dry propeller.

If propeller is of special design, state type. normal design. 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. 1. Can they be declutched? Yes.

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) 6.52 c.ft./min. F.R.D. driven by starboard auxiliary engine. Southampton Cert. No. D13290.

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 2 main receivers, each 3 1/4 c.ft.

How are receivers first charged? Hand-starting aux. engine. Maximum working pressure of starting air system. 350 lb./sq. in. Are the safety devices in accordance with the Rules? Yes.

COOLERS. No. of main engine fresh water coolers. 1. No. of main engine lubricating oil coolers. 1.

## OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure. 1 daily service fuel tank, forward in engine room, above platform.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) One pressure & one scavenge lubricating oil. One sea water & one fresh water cooling.

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	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
General Service driven by starboard auxiliary engine. 23 tons/hr. Oil Fuel-hand pump 3/4" bore	X	X	X			X							X	
				X								X		

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room. Hand bilge pumps: Forward cabin, 2" bore. Fore Peak, 2" bore. Forward Cofferdam, 2" bore.

No. and size connected to main bilge line in main engine room. 2 1/2" forward & 2 1/2" aft. In tunnel, no tunnel.

In aux. engine room. Size and position of direct bilge suction in machinery spaces. 2" hand pump suction (aft).

Size and position of emergency bilge suction in machinery spaces. 2" at forward end.

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 closed for navigation to sea? (strike out words not applicable). Yes.

## OIL ENGINE AUXILIARIES

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
Port	3 cyl. 12 1/4 BHP.	LESTER	Bristol Cert. 607949	7 kW, 110V. generator
Starboard	3 cyl. 29 BHP.	"	Bristol Cert. 607949	7.5 kW, 110V. generator
				General Service pump
				Air Compressor
				Oil retail pump
				Large oil pump

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? Yes. 0.6 kW, 24 V.

STEAM INSTALLATION. No. of donkey boilers burning oil fuel. 1. W.P. 50 lb./sq. in. Type. "Stone" Vapor Steam Generator.

Position. Forward in engine room, port side.

Is a superheater fitted? No. Are these boilers also heated by exhaust gas? No. No. of donkey boilers heated by exhaust gas only? None. 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?

boilers. London. Cert. D64978. Is steam essential for operation of the ship at sea? No. 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. None. No. of steam condensers. None. No. of Evaporators. None.

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) Hand operated rod & chain type.

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes. Brief description of arrangements. 1 hand extinguisher in engine room, & 1 hand extinguisher adjacent to entrance to engine room. 1 hydrant in engine room.

Has the spare gear required by the Rules been supplied? No. 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. 22/5/59. 3 hr.

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).

FOR AND ON BEHALF OF JAMES W. COOK & CO. (WYVERN) LTD.

Builder's Register Foundation

0332 2/2



## 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 ship has been built and installed under Special Survey in accordance with the Society's Rules, the approved plans, and the Secretary's letters. The materials and workmanship are good.

Upon completion, the machinery was tried at sea under full working conditions and found satisfactory. No gear hammer or shaft vibration was observed during the trials, when the machinery was operated & manoeuvred through the full speed range.

In my opinion the Machinery of this ship is eligible to be classed in the Register Book  $\frac{1}{2}$  LMC. S/59 (N). Oil engine, 1 D.B. 50 lb. Oil fired, and T.B. O.G. S/59

The boiler after satisfactory installation was examined under steaming conditions the safety valves being adjusted to 75 lb/sq. and the automatic cut out to 50 lb/sq.

*J. P. Graham*  
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 ROTOR SHAFT

6038. TDS. NOT. WW. LON. 8/1/59.

FLYWHEEL SHAFT

THRUST SHAFT

GEARING

MWD. 12019. Lloyd's Test. 11/6/58. LON. JHG.

INTERMEDIATE SHAFTS

None

SCREW SHAFTS

E28216. Lloyd's LTH. RH. 2564. IPS. FYW. 12/3/59.

PROPELLERS

P84466. Lloyd's IPS. FYW. 12/3/59.

OTHER IMPORTANT ITEMS

Donkey boiler No 20327. Lloyd's Hydr. test 600 lb. WP 300 lb. 17/3/59.  
WAR. LON.

Is the installation a duplicate of a previous case?

No

If so, state name of vessel

Date of approval of plans for crankshaft

23/12/58

Straight shafting

12/11/58

Gearing

Clutch

Separate oil fuel tanks

Pumping arrangements

6/4/58

Oil fuel arrangements

6/11/58

Cargo oil pumping arrangements

10/12/58

Air receivers

Donkey boilers

Dates of examination of principal parts:—

Fitting of stern tube

27/2/59

Fitting of propeller

20/3/59

Completion of sea connections

24/3/59

Alignment of crank shaft in main bearings

24/4/59

Engine checks &amp; bolts

24/4/59

Alignment of gearing

9/4/59

Alignment of straight shafting

9/4/59

Testing of pumping arrangements

22/5/59

Oil fuel lines

22/5/59

Donkey boiler supports

2/4/59

Steering machinery

22/5/59

Windlass

22/5/59

Date of Committee

FRIDAY 24 JUL 1959

Special Survey Fee

£25.0.0

Decision

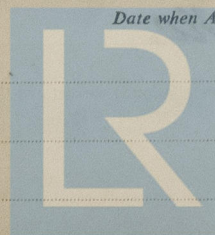
See Rpt. 1

Expenses

£9.0.0.

Date when A/c rendered

1 JUN 1959



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