

Rpt. 4b

Date of writing report 3rd June 1959. Received London Ipswich No. 140122. Survey held at Lowestoft No. of visits 5 In shops 12 On vessel 12 First date 15.1.59 Last date 5.2.59 3.11.58 3.6.59

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name MOTOR TUG "KANCHADEVA" Gross tons 44. Owners CROWN AGENTS FOR THE COLONIES. Managers - Port of Registry COLOMBO. Hull built at LOWESTOFT. By BROOKE MARINE LIMITED. Yard No. 269. Year Month 1959.5. Main Engines made at KEIGHLEY. By H. WIDDOP & CO LTD. Eng. No. 5807. When 1958. Gearing made at - By - Blr. Nos. - When - Donkey boilers made at - By - Blr. Nos. - When - Machinery installed at LOWESTOFT. By BROOKE MARINE LTD. When 1959.

Particulars of restricted service of ship, if limited for classification FOR TOWING SERVICES WITHIN 10 MILES OF THE CEYLON COAST.

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? 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 1 No. of propellers 1 Brief description of propulsion system Direct Reversing Diesel Oil Engine.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. WIDDOP E.M.B. 5. No. of cylinders per engine 5 Dia. of cylinders 8 1/2" stroke(s) 13 1/2" 2 or 4 stroke cycle 2 Single or double acting S.A. Maximum approved BHP per engine 275 at 440 RPM of engine and 440 RPM of propeller. Corresponding MIP 81.25 psi (For DA engines give MIP top & bottom) Maximum cylinder pressure 850 lbs/sq in Machinery numeral 275/5 = 55

Are the cylinders arranged in Vee or other special formation? Vertical in line If so, number of crankshafts per engine -

TWO STROKE ENGINES. Is the engine of opposed piston type? NO 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? Ports in cyl. covers No. and type of mechanically driven scavenge pumps or blowers per engine and how driven One double acting, 90 deg Vee, two cylinders, chain 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 1.4 lbs/sq in. Are scavenge manifold explosion relief valves fitted? Yes.

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 1 Inlet None Exhaust None Starting 1 Safety 1 Material of cylinder covers Steel Material of piston crowns Cast Iron 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, Cast Iron Frames? NO, Cast Iron Edtableture? NO, Cast Iron 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 33 ft^3 No. and total area of explosion relief devices 2 crankcase 32 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? No

Is the engine secured directly to the tank top or to a built-up seating? Built up seating How is the engine started? Direct Comp Air Can the engine be directly reversed? Yes. If not, how is reversing obtained? -

Has the engine been tested working in the shop? Yes. How long at full power? 4 hours, full power ahead.

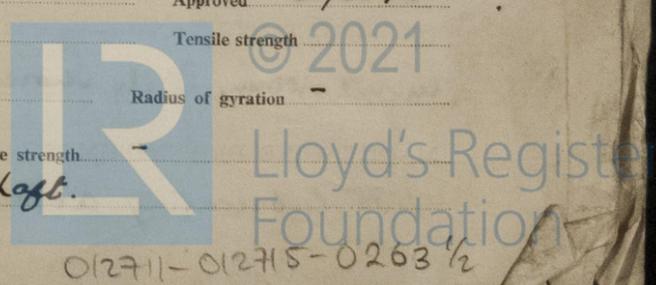
CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 7.10.58 14/5/59 420K + E.I.D. State barred speed range(s), if imposed for working propeller continuously below 105 rpm for spare propeller - Is a governor fitted? Yes. Is a torsional vibration damper or detuner fitted to the shafting? -

Where positioned? - Type 12" 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) 12" 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 5 3/4" Diameter of crankpins 5 3/4" Breadth of webs at mid-throw 7 1/2" Axial thickness of webs 3 3/8" Side - Pins } S.M. Steel Minimum 30/35 ksi^2 Approved 30/35 ksi^2 Tensile strength 2021

If shrunk, radial thickness around eyeholes - Are dowel pins fitted? - Crankshaft material Journals } S.M. Steel Webs } Tensile strength 2021 Diameter of flywheel 30 1/2" Weight 940 lbs. Are balance weights fitted? No 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) 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? \_\_\_\_\_ 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. Holset Flexible coupling No 69677 Lloyd's F.L.G.

Can the main engine be used for purposes other than propulsion when declutched? No. If so, what? \_\_\_\_\_

**STRAIGHT SHAFTING.** Diameter of thrustshaft 4.625" Material S.M. Steel Minimum approved tensile strength 30-35 tpci<sup>2</sup>

Shaft separate or integral with crank or wheel shaft? Separate Diameter of intermediate shaft 3 1/2" Material S.M. Steel

Minimum approved tensile strength \_\_\_\_\_ Diameter of screwshaft cone at large end 4 3/4" Is screwshaft 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/tube shaft S.M. Steel Minimum approved tensile strength \_\_\_\_\_

Is an approved oil gland fitted? Yes. If so, state type Newark-Type NP3. Length of bearing next to and supporting propeller 1'-4"

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 4.64' Pitch 2.0' Built up or solid Solid Total developed surface 8.54 ft<sup>2</sup>

No. of blades 4 RH Blade thickness at top of root fillet 2.4" Blade material Manganese Bronze Moment of inertia of dry propeller 75120 lbs/in<sup>2</sup>

If propeller is of special design, state type Scimitar 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? No.

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) 1 driven by aux diesel engine p.s after engine room 13.75 ft<sup>3</sup> per min salt cert No D12316.

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Two 11 cu ft. Air receivers leads cert Nos 30741 & 2. 1 P& 13 aft in engine room.

How are receivers first charged? Hand starting aux air compr. Maximum working pressure of starting air system 400 lbs/in<sup>2</sup> 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 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 Pls fuel oil bunker tanks forward in engine room, Daily Service Tank in engine casing S.S. aft.

**MAIN ENGINE DRIVEN PUMPS** (No. and Purpose) One salt water circulating pump, One bilge pump and two lubricating oil pumps. Belt driven F.W. circ pump.

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	Piston Cooling
General Service Pump (p.s.) X						X				X			X		X
Bilge Pump (S.S.A) X X	X	X				X				X			X		X
(6750 gals/hour)															
Stand By h.o. (2)															
Stand By F.W. Circulating					X					X					

**BILGE SUCTIONS.** No. and size in each hold, deep tank or pump room None. have pumps

No. and size connected to main bilge line in main engine room 1-2" diam forward

In aux. engine room No auxiliary engine room. Size and position of direct bilge suction in machinery spaces Not in tunnel 1-2 1/2" diam emerg.

Forward, 1-2" dia aft. 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? Yes.

Special requirements for ships carrying petroleum in bulk, cargo oil or closed 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)
Port Side	Diesel Oil Engine	Ruston Prosser	Nottingham cert C28722	25 kw Gen and Air Comp <sup>r</sup> .
Starboard Side	" " " " "	" " " " "	" " C28825	10 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 1-10 kw Gen.

Is an electric generator driven by Main Engine? No.

**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) Vickers Hand Hydraulic Steering gear No 1280 Type PT 15 leads cert C33922.

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes. Brief description of arrangements 2-2 gallon foam extinguishers 1 Sand Bucket Scoop, 1-Hose with spray jet type nozzle.

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 5<sup>th</sup> May 1959 - 5 hours at full power.

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.)

Builder [Signature]

Lloyd's Register Foundation

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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.

This machinery installation has been installed under Special Survey in accordance with the Rules, the approved plans and the Secretary's letters. The materials are sound and so far as can be seen, free from visible defects. The workmanship throughout is good. The completed installation was examined and tested and found satisfactory on sea trials carried out on the 5<sup>th</sup> May 1959. Torsiograph readings have been taken off the forward end of the engine and results submitted to London. Please see Secretary's letter dated 8.1.59. A notice board is fitted at the control platform stating that the engine is not to be operated continuously below 105 rpm and the tachometer marked accordingly. In my opinion this installation is eligible to have the notation \*LMC and T506(N) with date to be assigned on arrival at Colombo to which port the ship is proceeding as deck cargo.

G. Tawot.

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

✓ LR. 4275 LVH 20.2.59

✓ LR 4272 " "

✓ RH 4848 Heyds F.C.L. 20.2.59.

Stemtube - Heyds Test 306 LVH 20.2.59.

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

12.1.59

Gearing

Clutch

Separate oil fuel tanks

30.12.58

15.4.59.

Pumping arrangements

19.12.58

3.3.59

Oil fuel arrangements

19.12.58

Cargo oil pumping arrangements

Air receivers

Donkey boilers

Dates of examination of principal parts:-

Fitting of stern tube

1.3.59.

Fitting of propeller

9.3.59.

Completion of sea connections

9.3.59

Alignment of crank shaft in main bearings

4.5.59

Engine chocks & bolts

4.5.59

Alignment of gearing

Alignment of straight shafting

4.5.59.

Testing of pumping arrangements

5.5.59

Oil fuel lines

4.5.59

Donkey boiler supports

Steering machinery

5.5.59.

Windlass

5.5.59.

Date of Committee

MONDAY 20 JUL 1959

Special Survey Fee

£ 25.0.0

Decision

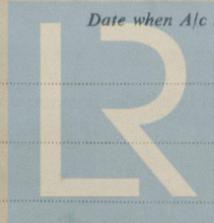
Deferred

Expenses

£ 3.12.0

Date when A/c rendered

15 JUN 1959



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