

Rpt. 4b

- 5 APR 1962

Date of writing report 13/2/62. Received London Port HULL. No. 67706. Survey held at Hessle & Hull. In shops No. of visits On vessel 30. First date 7. 11. 61. Last date 20. 3. 62.

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name "CHARLES H. McKAY" Gross tons

Owners Melbourne Harbor Trust Commissioners. Managers Port of Registry Melbourne. Hull built at Hessle. By Richard Dunston (Hessle) Ltd. Yard No. 5.780. Year Month When 1962.

Main Engines made at Stockport. By Mirrlees, Bickerton & Day. Eng. No. 56721. When 1961.

Gearing made at Donkey boilers made at Machinery installed at Hessle. By Richard Dunston (Hessle) Ltd. When 1962.

Particulars of restricted service of ship, if limited for classification 100AL Hopper Barge "To operate anywhere within the Port of Melbourne, also within Port Phillip Bay".

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? 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 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 Oil Engine direct drive.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Mirrlees KLSSDM.6.

No. of cylinders per engine 6. Dia. of cylinders 15" stroke(s) 20" 2 or 4 stroke cycle 4 Single or double acting S.A.

Maximum approved BHP per engine 1098 at 275 RPM of engine and 275 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: Bedplates 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? Built-up seating. How is the engine started? Compressed air.

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

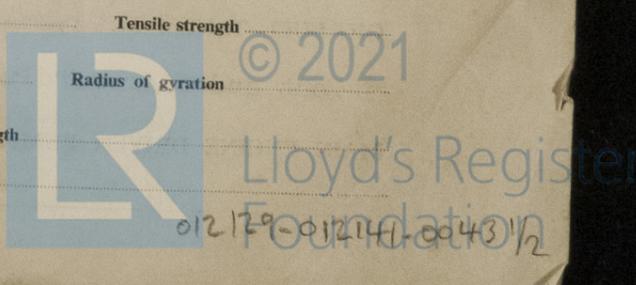
If shrunk, radial thickness around eyeholes Are dowel pins fitted? Crankshaft material Journals Pins Minimum Approved Tensile strength

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 MANCHESTER REPORT 4b No. 559.



MAIN GAS TURBINES. Name and Type No. _____ at _____ RPM of output shaft

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. (A small diagram should be attached showing gas cycle.)

HP drives _____ at _____ RPM HP gas inlet temperature _____ pressure

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? _____ Are gear bearings of ball or roller type? _____

Where is the propeller thrust bearing located? _____

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? Separate. Diameter of intermediate shaft _____ Material S.M. Ingot steel.

Minimum approved tensile strength 28 tons/sq. in. Diameter of screwshaft cone at large end 9.7/8" 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 _____

bearings _____ Thickness between bearings _____ Material of screw/tube shaft S.M. Ingot steel. Minimum approved tensile strength 28 t

Is an approved oil gland fitted? Yes If so, state type Newark No. 2. Length of bearing next to and supporting propeller 3'-4"

Material of bearing C.I. bush white metal lined. 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 7'-9" Pitch 4'-3" Built up or solid Solid Total developed surface 26 sq. ft

No. of blades 4 Blade thickness at top of root fillet 3.54" Blade material Bronze. Moment of inertia of dry propeller 7870 lb/ft

If propeller is 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 Bronze. Moment of inertia 7870 lb/ft

Belt driven Yes Can they be de-clutched? Yes.

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

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) One .15.7 cu.ft./min. by S.S.A. Russell Newbery Eng. Sou.D.18200. One 12.9 cu.ft./min. P.S.A. Electric Drive Sou.D.18622.

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Two 23 cu.ft. each Port & Starboard E.R. Aft. No. 23/9143 & 23/9144. Lds. Cert. Nos. C.41169 & C.41170.

How are receivers first charged? start diesel engine. Compressor driven by hand _____ Maximum working pressure of starting air system 300 lb/sq. in. Are the safety devices 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 Two Diesel Oil daily service. One Port and Starboard upper casing.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) One F.W., One S.W., Two lub. oil. One lub. oil pressure. One

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														Over Bd.	Dom. FW.	Oily bilge sep.
	SUCTION							DELIVERY									
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	FW Tanks	Lub. Oil	Hopper	Hot Water	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling	
G.S. pump s.s.f. centre Electric driven 70 TPH.	X	X	X			X	X		X	X				X			X
Ballast pump s.s.f. Electric driven 300TPH.			X			X			X	X							X
Bilge pump s.s.f. inboard Electric driven 5 TPH	X	X															X
Bilge pump 25 TPH Belt driven from M.E. (ss).	X					X					X						X
F.W. pump Electric driven 3 TPH.							X										X
DeWatering pump (psf) Electric driven 300 TPH.									X								X
O.F. transfer pump. Electric driven.				X									X				X
Diesel driven emergency fire pump.						X								X			X

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room 1 - 7" fore hold; 1 - 4" fore peak (ballast); 1 - 5" aft. peak (ballast); 1 - 2" steering gear compartment (hand pump).

No. and size connected to main bilge line in main engine room 2 - 2 1/2" p. & s.

In aux. engine room 1 - 3" M.E. belt driven bilge pump aft. In tunnel _____

Size and position of direct bilge suction in machinery spaces 1 - 2" Aft. d.

Size and position of emergency bilge suction in machinery spaces 1 - 4"

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 and special requirements for ships carrying petroleum in bulk, cargo oil or classed for navigation in ice? 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.	LE6 No. 6LE0347/55	National McLaren.	Manchester Rpt. 10/4c. No. 575.	75 K.W. Alternator.
Starboard side.	LE6 No. 6LE0348/55	-do--do-	-do- -do- -do-	-do- -do-
Starboard side aft.	No. 719AL1763.	Russell Newbery.	Sou. Rpt. 10 D. 18200.	Air compressor.
Fore hold.	No. 10J9945.	-do--do-	Sou. Rpt. 10 D. 17469.	Emergency fire pump.

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 75 K.W. 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? None. 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? _____

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 _____

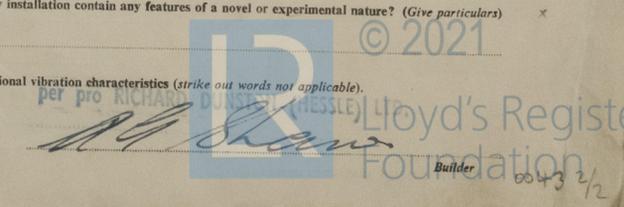
STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars.) One Hand and Electric driven Hydraulic type H.30 Frydenbo Slip No. 534 FS MV 4/10/61LR. Bergen Cert. No. 10647.

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes. Brief description of arrangements 2-10 Gall & 3-2 Gall froth extinguishers, 2 hydrants hoses & jet spray nozzles, O.F. outlet valves extended spindles, O.F. transfer remote stop outside E.R. Diesel driven emergency fire pump.

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 12/3/62 4 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).



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 has been constructed and installed under Special Survey in accordance with the Rules, Approved plans and Secretary's letters, tested under working conditions and found satisfactory.

The materials and workmanship are good.

The Machinery is eligible in my opinion to be classed in the Register Book with the record of *LMC 3,62 and Notation TSOG.

Oil Engine 4 S.C.S.A. 6 cyl. 15" dia. x 20" stroke.

J. Vincent

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 Mch.Rpt. 4b No.559.

CRANKSHAFT OR ROTORSHAFT -do- -do-

FLYWHEEL SHAFT

THRUSTSHAFT -do- -do-

GEARING

INTERMEDIATE SHAFTS Lloyd's Sld. No.9581 A.G. 11/5/61 17/11/61 D.V. Hul.

SCREW AND TUBE SHAFTS Lloyd's Sld. No.9474 J.M. 18/4/61. ~~17/12/61~~ 7/12/61 D.V. Hul.

PROPELLERS 4 bladed bronze Lloyd's No.72896 D.M. Gls. 31/8/61 Cert.No.72896.

OTHER IMPORTANT ITEMS C.I. Stern tube tested 30 lb/sq.inch R.H.B. 22/9/61 Hul.Cert.No.3994.

Spare tailshaft Lloyd's No.9591 Sld. A.G. 12/5/61 D.V. 2/2/62 Hul.

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 7/3/61 Gearing - Clutch -

Separate oil fuel tanks 19/10/61 Pumping arrangements 16/11/61 Oil fuel arrangements 8/8/61

Cargo oil pumping arrangements - Air receivers - Donkey boilers -

Dates of examination of principal parts:-

Fitting of stern tube 7/12/61 Fitting of propeller 17/11/61 Completion of sea connections 11/12/61 Alignment of crank shaft in main bearings -

Engine chocks & bolts 26/1/62 Alignment of gearing - Alignment of straight shafting 26/1/62 Testing of pumping arrangements 6/3/62

Oil fuel lines 6/3/62 Donkey boiler supports - Steering machinery 12/3/62 Windlass 12/3/62

Date of Committee FRIDAY 17 MAY 1963 Special Survey Fee £53.15s.

Decision *Deferred.*

Expenses £4.15s.

4 MAY 1962



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