

Rpt. 4b

3 JUL 1961

Date of writing report 8.6.61. Received London Hong Kong No. 16252
 Survey held at Hong Kong No. of visits In shops 16 First date 15.12.60. Last date 3.5.61.
 On vessel 12 Last date 20.5.61.

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name T.S. M.V. "KURWINA" Gross tons 227.02
 Owners Burns Philp & Co., Ltd. Managers - Port of Registry Port Moresby
 Hull built at Hong Kong By Taikoo Dkyd & Eng. Co. Ltd. Yard No. 486 Year Month 1961-5
 Main Engines made at Patricroft By L. Gardner & Sons Eng. No. 125706 & 125707 When 1960-8
 Gearing made at By -
 Donkey boilers made at None By - Blr. Nos. - When -
 Machinery installed at Hong Kong By Taikoo Dkyd & Eng. Co. Ltd. When 1961-5

Particulars of restricted service of ship, if limited for classification "For New Guinea Coasting 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? No

Is refrigerating machinery fitted? Yes If so, is it for cargo purposes? No 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? No

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 2 Brief description of propulsion system 3: 1 Red/Reverse Gear

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Gardner 6L3 Vertical Solid Injection Heavy Oil

No. of cylinders per engine 8 Dia. of cylinders 5 1/2" stroke(s) 7-3/4" 2 or 4 stroke cycle 4 Single or double acting Single

Maximum approved BHP per engine 99 at 900 RPM of engine and 300 RPM of propeller.

Corresponding MIP 120 PSI (For DA engines give MIP top & bottom) Maximum cylinder pressure 850 PSI Machinery numeral 20

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? - 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 None Can engine operate without supercharger? -

TWO & FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel One Inlet One Exhaust One Starting - Safety None

Material of cylinder covers Cast Iron Material of piston crowns Aluminium 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 Piston Total internal volume of crankcase 18,800 cu.ins. No. and total area of explosion relief devices None Fitted Are flame guards or traps fitted to relief devices? - 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? - How is the engine started? Electric Motors

Can the engine be directly reversed? No If not, how is reversing obtained? -

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

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 10.10.60. State barred speed range(s), if imposed See Secretary's letter 10.10.60.

for working propeller - For spare propeller - Is a governor fitted? Yes Is a torsional vibration damper or detuner fitted to the shafting? Yes

Where positioned? Forward end of crankshaft Type Spring Loaded No. of main bearings 7 Are main bearings of ball or roller type? - Distance between inner edges of bearings in way of crank(s) 6-15/16" Distance between centre lines of side cranks or eccentrics of opposed piston engines -

Crankshaft type: Built, semi-built, solid. (State which) Solid D.F.

Diameter of journals 4-1/8" Diameter of crankpins 3-5/8" Breadth of webs at mid-throw 5 1/2" Axial thickness of webs 1-11/16"

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

Diameter of flywheel 29 1/2" Weight 586 lbs. Are balance weights fitted? No Total weight - Radius of gyration 12.35"

Diameter of flywheel shaft - Material - Minimum approved tensile strength -

Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Flywheel mounted on crankshaft.

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Extracted from Manchester Report No. 327

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? Single If single, position of gear thrust bearing Fore end of output shaft. Is gearing of epicyclic type? No

PCD of pinions: First reduction 5.0491" Second reduction _____ PCD of wheels: First reduction 14.9454" Main _____

Material of pinions EN.33 Tensile strength _____ Material of wheel rims EN.24 Tensile strength _____

Are gear teeth surface hardened? Yes How are teeth finished? Shaved Diameter of pinion journals 2 1/2" Wheel shaft journals 2 1/2" & 3 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? _____ Where is the propeller thrust bearing located? Aft end of output shaft. Are gear bearings of ball or roller type? Ball

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. Multiplate Ahead & Astern Clutches, hand lever operated.

Can the main engine be used for purposes other than propulsion when declutched? Yes If so, what? Pumping bilges with engine driven bilge pump & stbd engine also drives hydraulic pump for windlass, & deck machinery.

STRAIGHT SHAFTING. Diameter of thrustshaft _____ Material _____ Minimum approved tensile strength _____

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

Minimum approved tensile strength _____ Diameter of screwshaft cone at large end 3 1/2" 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 _____ Material of screw/tube/shaft Stainless steel to B.S.S. 970, EN-57. Minimum approved tensile strength _____

Is an approved oil gland fitted? Yes If so, state type Vickers Length of bearing next to and supporting propeller 14 1/2"

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'-4" Pitch 3'-4" Built up or solid Solid Total developed surface 6.03 sq.ft.

No. of blades 3 Blade thickness at top of root fillet 2.181" Blade material Manganese Bronze Moment of inertia of dry propeller 337.6 lbs. ft.

If propeller is of special design, state type No 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 None Can they be declutched? _____

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) None

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) None

How are receivers first charged? _____ Maximum working pressure of starting air system _____ Are the safety devices in accordance with the Rules? _____ Has the starting of the main engines been tested and found satisfactory? Yes

COOLERS. No. of main engine fresh water coolers 2 No. of main engine lubricating oil coolers 2

One main engine daily service s.s.fwd

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure _____

in engine-room, and one aux. engine daily service p.s.fwd. in engine-room.

One Ram type Pump 7.2 G.P.M.
One Centrifugal - Jacket Circulation Pump 30 G.P.M.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose)

2 Gear type Lubrication Pumps, fitted outside the engine - 4.1 G.P.M. each.

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps. (All in Engine-Room)	SUCTION										DELIVERY				
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed	Lub. Oil	Diesel	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Ballast
G.S. Pump - s.s.a. Aux. Diesel Eng., 28 tons/hr.			X			X				X			X		X
Fire & G.S. Pump - s.s. mid., Elect. motor, 4 tons/hr.	X		X			X				X			X		X
Hydraulic Pump - for windlass & winches. Fwd. centre Aux. Diesel Eng., also S.M.E.															
Oil Fuel Pump - on fwd. bulkhead mid., Hand 1200 galls/hr.				X								X			
"Giljector" Bilge Ejectors - 1 p.s.fwd., 1 s.s. aft. 11 tons/hr. each. Operated by G.S. Pump.	X														X
Cargo Oil Pump - in separate compartment, s.s.fwd. abreast chain locker, Elect. motor 5 tons/hr.															

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room 3 @ 2 1/2" in hold, port aft, centre aft, & stbd aft.
1 @ 2" in steering gear compartment.

No. and size connected to main bilge line in main engine room 1 @ 2" p.fwd; 1 @ 2" s.fwd. In tunnel _____

In aux. engine room _____ Size and position of direct bilge suctions in machinery spaces 1 @ 2" p.aft
1 @ 2" s.aft. Size and position of emergency bilge suctions in machinery spaces None

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 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)
Between p & s M.E.	4 SCSA Heavy Oil (3 LW)	L. Gardner & Sons.	Man. 422 <u>X 30yl</u>	7.5 K.W. generator & hydraulic pump (gear driven).
Aft in E.R.	4 SCSA Heavy Oil (2 LW)	L. Gardner & Sons.	Man. 419	7.5 K.W. generator & General service 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 @ 34 amps. 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? _____ 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 Hand Operated Rotary Hydraulic A/S Frydenbo, Norway. Aux. gear - hand tiller, blocks, & falls.

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements 2 - 2 galls. froth extinguishers & spare charges; 1 triple purpose "Fyrex" nozzle; 1 2" hydrant, and 30 ft. canvas hose; 1 sandbox and scoops, - all 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 sea trials of main engines 16.5.61.; 3 1/2 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).



Extracted from Manchester Report No. 327

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 under Special Survey by the Society's Surveyors, and has been installed in Hong Kong under Special Survey in accordance with the approved plans and the Secretary's letters. All necessary materials have been satisfactorily tested, and the workmanship is good. On completion of installation the machinery was examined under working conditions and found satisfactory, and in my opinion eligible to be classed as contemplated.

Attached hereto:-

- Manchester Rpt. 4b, No. 327, for Main Engines.
- Copies of Manchester Rpt. 10/4c Nos. 419 & 422 for Aux. Engines.
- Copy of Hong Kong Rpt. 6 for screwshaft couplings, distance pieces, & coupling bolts.
- Copy of Barrow (Cert. Pump) P. 3548 for Gen. Service Pump No. 123880.
- Copy of Bergen Rpt. 10 Cert. 10253 for windlass hydraulic pump No. 4072.
- Copy of Hong Kong Rpt. 10 No. F 1102 for p. & s. propellers.
- Copy of Hong Kong Rpt. 10 No. F 1098 for port & stbd. tailshafts, couplings, distance pieces, & coupling bolts.
- Copies of Manchester (Cert. Pump) C3762 for Fire & Gen. Service Pump No. J45581/2 & C3760 for cargo oil pump No. J45580/1 attached to Rpt. 4b for sister ship "KALILI".
- Approved plans for Main & Aux. O.F. daily service tanks, Pumping Arrangements, and Shafting forwarded with Rpt. 4b for "KALILI".

J.L.V. Whittle
 J.L.V. Whittle
 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 P.138, 138, 143, 138, 138, 143) 6.7.60. RJY (Birmingham).
 S.139, 138, 134, 138, 138, 132)

CRANKSHAFT OR MOTOR SHAFT LLOYD'S DF 182 1.4.60. RJY (Sheffield).
 LLOYD'S DF 167 4.4.60. RJY

FLYWHEEL SHAFT

THRUST SHAFT

GEARING Main Shaft 193 6.7.60. RJY.
 Secondary Shaft 197 6.7.60. RJY.

INTERMEDIATE SHAFTS None

SCREW AND OTHER SHAFTS Port & starboard:- "LLOYD'S H.KG. F1107 J.L.W. 27 FEB. 61."

PROPELLERS Port & starboard:- "LLOYD'S H.KG. No. 1102 J.L.W. 27 MARCH 61."

OTHER IMPORTANT ITEMS Forged steel couplings & distance pieces for screwshafts :- "LLOYD'S H.KG. F1098 J.L.W. 27 FEB. 61."; Screwshaft coupling bolts :- "LLOYD'S H.KG. F1099 (or F1100) J.L.W. 7 MAR. 61."

Is the installation a duplicate of a previous case? Yes If so, state name of vessel "KALILI" - Yard No. 485.

Date of approval of plans for crankshaft 16.5.60. Straight shafting 8.7.60. Gearing 16.5.60. Clutch 16.5.60.
 Ship Engine

Separate oil fuel tanks 12.7.60. Pumping arrangements 21.9.60. Oil fuel arrangements 11.10.60.

Cargo oil pumping arrangements - 11.10.60. Air receivers - - Donkey boilers - -

Dates of examination of principal parts:-

Fitting of stern tube 8.3.61. Fitting of propeller 27.2.61. Completion of sea connections 8.3.61. Alignment of crankshaft in main bearings 10.4.61.

Engine checks & bolts 10.4.61. Alignment of gearing 10.4.61. Alignment of straight shafting 10.4.61. Testing of pumping arrangements 12.5.61.

Oil fuel lines 12.5.61. Donkey boiler supports - Steering machinery 16.5.61. Windlass 16.5.61.

Date of Committee FRIDAY - 1 SEP 1961 Special Survey Fee \$720.00

Decision Deferred for General Examination Expenses 10.00

See LA 4574

Extracted from Manchester Report No. 327

