

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

# 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 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? 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 Piston Total internal volume of crankcase 18,800 cu.ins.

devices None Fitted Are flame guards or traps fitted to relief devices? No 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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# 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 \_\_\_\_\_ Ford 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

## COOLERS.

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

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

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 One Ram type Pump 7.2 G.P.M.

in engine-room, and one aux. engine daily service p.s.fwd. in engine-room. 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)	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	Fire	Oil Fuel Tanks	Fire Main	Ballast
G.S. Pump - s.s.a. Aux. Diesel Eng., 28 tons/hr.			X			X			X	X
Fire & G.S. Pump - s.s. mid., Elect. motor, 4 tons/hr.	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		
"Gillieator" 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 aux. engine room \_\_\_\_\_ Size and position of direct bilge suction in machinery spaces 1 @ 2" p.aft

1 @ 2" s.aft. Size and position of emergency bilge suction 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. (3 LW)	4 SCSA Heavy Oil	L. Gardner & Sons.	Man. 422	7.5 K.W. generator & hydraulic pump (gear driven).
Aft in E.R. (2 LW)	4 SCSA Heavy Oil	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 "Tyrex" 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).

THE AKO DOCKYARD & ENGINEERING COMPANY OF HONG KONG LIMITED

Lloyd's Register  
Builder  
010846-010857-02132/2



# 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 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

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.)

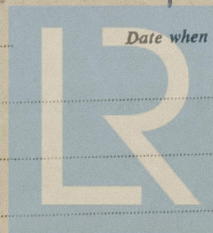
RODS P.138, 138, 143, 138, 138, 143 ) 6.7.60. RJY (Birmingham).  
S.139, 138, 134, 138, 138, 132 )  
CRANKSHAFT OR MOTOR SHAFT LLOYD'S DF 182 1.4.60. RJY (Sheffield).  
LLOYD'S DF 167 4.4.60. RJY  
FLYWHEEL SHAFT  
THRUST SHAFT Main Shaft 193 6.7.60. RJY.  
GEARING Secondary Shaft 197 6.7.60. RJY.  
INTERMEDIATE SHAFTS None  
SCREW SHAFTS Port & starboard:- "LLOYD'S H.KG. F1107 J.L.W. 27 FEB. 61."  
Port & starboard:- "LLOYD'S H.KG. No.1102 J.L.W. 27 MARCH 61."  
PROPELLERS 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.  
Separate oil fuel tanks 12.7.60. Pumping arrangements 21.9.60. Ship Engine 11.10.60. 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 Defered for General Examination Expenses 10.00

See LA 4574

Date when A/c rendered

23rd May, 1961.



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