

Rpt. 4b

Date of writing report 23-8-58.

Received London

Port of HONG KONG.

No. 14394A

Survey held at Hong Kong.

No. of visits In shops -
On vessel 14.

First date 12-7-57.

Last date 12-8-58.

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name "DEGEI II" Gross tons 168.
Department of Public Works,
Owners Government of Fiji. Managers Pacific Islands Shipbuilding Co., Ltd.
Port of Registry Hong Kong.
Built at Hong Kong. Yard No. 168.
Year Month
When 1958 July.
Main Engines made at Patricroft By L. Gardner & Sons Ltd. P 113188
When 1957 May.
S 113189
Boilers made at Patricroft By L. Gardner & Sons Ltd.
Machinery installed at Hong Kong. By Pacific Islands Shipbuilding Co., Ltd.
When 1958 July.
Particulars of restricted service of ship, if limited for classification Auckland N.Z. & South Pacific Islands.

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.
Refrigerating machinery fitted? Yes. If so, is it for cargo purposes? No. Type of refrigerant Dichlorodifluoromethane.
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 port need not be repeated below, but the port and report number should be stated.

No. of main engines Two No. of propellers Two Brief description of propulsion system Through clutch and reduction gear.
MAIN RECIPROCATING ENGINES. Licence Name and Type No. Gardner 8L3 Type Solid Injection Heavy Oil.
No. of cylinders per engine 8 Dia. of cylinders 5 1/2" stroke 7 3/4" 2 or 4 stroke cycle 4 Single or double acting Single.
Maximum approved BHP per engine 144 at 900 RPM of engine and 458 RPM of propeller.
Responding MIP 120 p.s.i. (For DA engines give MIP top & bottom) Maximum cylinder pressure 850 p.s.i. Machinery numeral 58.
Are the cylinders arranged in Vee or other special formation? Vertical In Line. If so, number of crankshafts per engine -

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? -
Stand-by or emergency pump or blower is fitted, state how driven - No. of scavenge air coolers - Scavenge air pressure at full -
Are scavenge manifold explosion relief valves fitted? -

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 Nil. No. of supercharge air coolers per engine Nil. Supercharge air pressure - Can engine operate without supercharger? -

& FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel One Inlet One Exhaust One Starting One Safety Nil. (5 cyls)
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 Nil Fuel valves Nil Overall diameter of piston rod for double acting engines -
Is the piston rod fitted with a sleeve? - Is welded construction employed for: Bedplate? No. Frames? No. Entablature? No. Is the crankcase separated from the side of pistons? No. Is the engine of crosshead or trunk piston type? Trunk Total internal volume of crankcase - No. and total area of explosion relief -
Nil. Are flame guards or traps fitted to relief devices? - Is the crankcase readily accessible? Yes. If not, must the engine be removed for access of bearings, etc? - Is the engine secured directly to the tank top or to a built-up seating? Seating. How is the engine started? Compressed Air.
Can the engine be directly reversed? No. If not, how is reversing obtained? Friction Clutch & Reverse Gear.

Has the engine been tested working in the shop? Yes. How long at full power? 4 Hours.
K & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 13-6-58. State barred speed range(s), if imposed Nil. For spare propeller Nil. Is a governor fitted? Yes. Is a torsional vibration damper or detuner fitted to the shafting? Yes.
Positioned? Forward End Crankshaft Type Spring Loaded. No. of main bearings 9 Are main bearings of ball or roller

No. 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 -
Shaft type: Built, semi-built, solid. (State which) Solid.
No. of journals 4 1/8" Diameter of crankpins Centre 3 5/8" Side - Breadth of webs at mid-throw 5 1/2" Axial thickness of webs 1-11/16".
Radial thickness around eyeholes - Are dowel pins fitted? - Pins - Minimum -
Crankshaft material Journals - Approved -
Webs - Tensile strength -
No. of flywheel 29 1/2" Weight 586 lbs. Are balance weights fitted? No. Total weight - Radius of gyration 12.35"
No. of flywheel shaft - Material - Minimum approved tensile strength -
Shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Integral with crankshaft.

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? Are the turbines operated in conjunction with free piston gas generators? How is reversing effected? Diameter of working pistons Diameter of compressor pistons No. of double strokes Total No. of free piston gas generators Gas delivery pressure Gas delivery temperature Have the turbines and attached equipment been tested within minute at full power How long at full power? in the shop?

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 Motors? How is power obtained for excitation of generators?

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 Forward of pinion. Is gearing of epicyclic type? No.

PCD of pinions: First reduction Second reduction PCD of wheels: First reduction Main Tensile strength Material of pinions Tensile strength Material of wheel rims Diameter of pinion journals Wheel Are gear teeth surface hardened? How are teeth finished? Is gearcase of welded construction? No. Has the wheel/gearcase been heat treated on complete journals? Are the wheels of welded construction? Are gear bearings of ball or roller type? Yes. of welding? Where is the propeller thrust bearing located? Aft of gear wheel.

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 description and, for clutches, state how operated Friction Clutch Hand Operated.

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

STRAIGHT SHAFTING. Diameter of thrustshaft 3 1/4" Material Steel. Minimum approved tensile strength Shaft separate or integral with crank or wheel shaft? Diameter of intermediate shaft 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 in bearings Thickness between bearings Material of screw/tube shaft Steel Minimum approved tensile strength Is an approved oil gland fitted? Yes. If so, state type Vickers Length of bearing next to and supporting propeller 15" 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 3'-9" Pitch 2'-10" Built up or solid Solid. Total developed surface 5 sq. ft. No. of blades 4 Blade thickness at top of root fillet 13/16" Blade material Cast Iron Moment of inertia of dry propeller 4 lbs. ft. If propeller is of special design, state type Is propeller of reversible pitch type? No. If so, is it of approved design? Material of spare propeller Cast Iron Moment of inertia 4 lbs. ft. State method of control 11 cub. ft./min. Can they be declutched? Yes.

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors One Can they be declutched? Yes. No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) One, 11 cub. ft. per min. driven by auxiliary engine in engine room forward. Manchester 18048. No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Two - each 4 cub. ft. Engine Room forward port & starboard. Certificate Nos. 720903 & 720906 Sheffield AR How are receivers first charged? Compressor driven by hand start aux. engines. Maximum working pressure of starting air system 350 lbs./sq. 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 Two No. of main engine lubricating oil coolers Two OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure One E.R. Aft.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) Two (1p, 1s) Salt Water Cooling Circulating Pump (centrifugal) Two (1p, 1s) Fresh Water Cooling Circulating Pump (Reciprocating) Two (1p, 1s) Lub. Oil Pump (Recip. Type), One Bilge Pump (starboard only) (centrifugal type) 17.6 tons per hour at 30 ft. head.

| INDEPENDENT PUMPS 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 | | | | | | | | | | | | | |
|---|--|--------------|--------------|----------|---------------------|-----|------------|----------|-------------|--------------------|---------------------|----------------|-----------|----------|
| | 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 Engine Room (starboard fwd.) 15 tons per hr. Aux. Engine Driven. | X | X | | | | X | | | | X | | | X | X |
| O.F. Transfer (2) Hand | | | | X | | | | | | | | X | | |

BILGE SUCTIONS. No. and size in each hold, ~~deep tank or pump room~~ etc. Hold two 1p, 1s each 2" dia. Cofferdam one 2" dia. Bosun store one 2" dia. After compt. one 2" dia. Steering Gear Compt. one 2" dia. Fore Peak Hand pump. No. and size connected to main bilge line in main engine room Two each 2" dia. In tunnel in aux. engine room Size and position of direct bilge suction in machinery spaces 2" dia. E.R. centre. Size and position of emergency bilge suction in machinery spaces one 3" dia. 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 oil classed for navigation in ice? (strike out words not applicable). Yes.

STEAM & OIL ENGINE AUXILIARIES

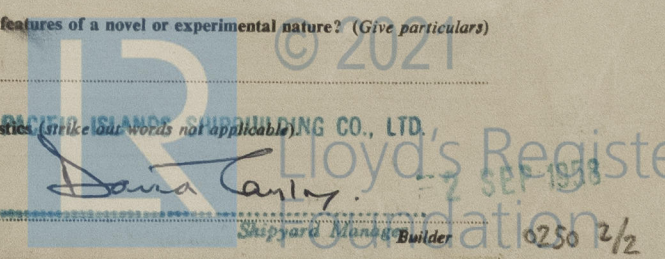
| Position of each | Type | Made by | Port and No. of Rpt. or Cert. | Driven Machinery (For electric generators, state output) |
|------------------|---------------------|--------------|-------------------------------|--|
| E.R. Forward | 4 SCSA 10 H.P. A.V. | Petters Ltd. | - | Generator 6.5 K.W. Air compressor. |

Electric current used for essential services at sea? G.S. pump only. If so, state the minimum No. and capacity of generators required in order that the ship may operate One 3.5 K.W. Is an electric generator driven by Main Engine? Yes. *JPW*

STEAM INSTALLATION. No. of donkey boilers burning oil fuel W.P. Type superheater fitted? Are these boilers also heated by exhaust gas? No. of donkey boilers heated by exhaust gas only? W.P. Position Can the exhaust heated boilers deliver steam directly to steam range or do they operate only as economisers in conjunction with oil fired boilers? Port and No. of report on donkey 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 No. of steam condensers No. of Evaporators

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) Hand Gear. the Rule Requirements for fire extinguishing arrangements been complied with? Yes. Brief description of arrangements One hydrant with hose and combined nozzle. Four two gallon extinguishers - foam 1 C.T.C. 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 sea trials of main engines 11th August, 1958. 6 Hours. Does this machinery installation contain any features of a novel or experimental nature? (Give particulars) No.

Regarding description of the main engine and installation is correct and the particulars are as approved for torsional vibration characteristics (Strike out words not applicable) Yes.



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 vessel has been built and installed under survey by the Society's Surveyors in accordance with the approved plans and Secretary's letters. All materials have been satisfactorily tested as required and the workmanship is good. On completion of installation the machinery was examined under working conditions, found satisfactory, and, in my opinion, is eligible to be classed as contemplated +LMC N.E. 7, 5.

Gearing was carefully checked at 272 R.P.M. and vicinity but no gear hammer was

Plans forwarded herewith

Arrangement & Details of Stern Tube & Tail Shaft.

Details of Oil Sealing Ring - A Bracket.

Details of Propeller.

Engine Room Piping Diagram.

Documents forwarded herewith

Report 6 on forgings.

Interim Certificate B.1.

James A. Anderson.
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
T = 7 off 17-4-57. R.J.Y. B'ham Report 10 No. D.12897.
R = 3 off 17-4-57. R.J.Y. B'ham Report 10 No. C.9687.
N = 6 off 17-4-57. R.J.Y. B'ham Report 10 No. C.8681.

CRANKSHAFT OR ROTOR SHAFT
Lloyd's 2403E 20-3-57. R.J.Y. Sheff. Report 6 No. F.67833.
Lloyd's 2154E 10-4-57. R.J.Y. Sheff. Report 6 No. F.67162.

FLYWHEEL SHAFT -

THRUST SHAFT -

GEARING -

INTERMEDIATE SHAFTS - Lloyd's H.Kg. No. 659 J.A.A. Nov. 25-57.

SCREW AND TUBE SHAFTS Lloyd's H.Kg. No. 660 J.A.A. Nov. 25-57.

PROPELLERS -

OTHER IMPORTANT ITEMS -

Is the installation a duplicate of a previous case? No. If so, state name of vessel -
Date of approval of plans for crankshaft 10-4-57. Straight shafting 23-7-58. Gearing 10-4-57. Clutch 10-4-57.
Separate oil fuel tanks 16-6-58. Pumping arrangements 18-6-58. Oil fuel arrangements 18-6-58.
Cargo oil pumping arrangements - Air receivers - Donkey boilers -
Dates of examination of principal parts:-
Fitting of stern tube 1-8-58. Fitting of propeller 7-8-58. Completion of sea connections 27-9-57. Alignment of crankshaft in main bearings -
Engine checks & bolts 1-8-58. Alignment of gearing - Alignment of straight shafting 1-8-58. Testing of pumping arrangements 11-
Oil fuel lines 1-8-58. Donkey boiler supports - Steering machinery 11-8-58. Windlass 11-8-58.
Date of Committee TUESDAY 30 SEP 1958
Decision Deferred.
Special Survey Fee \$768.00
Expenses \$28.00

Date when A/c rendered 15th August, 1



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Foundation