

orkmanship and give
as fully as possible.

Rpt. 4b

-8 OCT. 1961

22 NOV 1962

Date of writing report 26/9/61.

Received London

Port

FLEETWOOD. 935.

No. 157695

Survey held at Preston.

No. of visits In shops 6
On vessel

First date

17-3-61.

Last date

29-7-61.

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name "ARAMOANA" Gross tons
Owners New Zealand Government. Managers - Port of Registry
Hull built at Dumbarton. By Wm. Denny & Bros. Yard No. When
Main Engines made at Preston. By English Electric Co. Ltd. Eng. No. I.H. 5569 ✓ When 1961-7
Gearing made at By
Donkey boilers made at By Bir. No. When
Machinery installed at By When

Particulars of restricted service of ship, if limited for classification
Particulars of vegetable or similar cargo oil notation, if required
Is ship to be classed for navigation in ice? Is ship intended to carry petroleum in bulk?
Is refrigerating machinery fitted? 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 6 ONE No. of propellers Brief description of propulsion system Diesel Electric.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. English Electric Diesel. Type 16 CSVM.
No. of cylinders per engine 16 ✓ Dia. of cylinders 17.65 10" stroke(s) 12" 2 or 4 stroke cycle 4 ✓ Single or double acting Single ✓
Maximum approved BHP per engine 1745 at 750. ✓ RPM of engine and 250 ✓ RPM of propeller.
Corresponding MIP 145 (For DA engines give MIP top & bottom) Maximum cylinder pressure 950 ✓ Machinery numeral 349 ✓
Are the cylinders arranged in Vee or other special formation? V Formation. If so, number of crankshafts per engine One.

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? Yes. Are the undersides of the pistons arranged as supercharge pumps? NO. No. of exhaust gas driven blowers per engine 4
No. of supercharge air coolers per engine 4 Supercharge air pressure 10" Hg. Can engine operate without supercharger? Yes.

TWO & FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel One. Inlet Two Exhaust Two Starting One Safety One
Material of cylinder covers Cast-iron. Material of piston crowns Alumin. Alloy. Is the engine equipped to operate on heavy fuel oil? No.
Cooling medium for: Cylinders Fresh Water. Pistons None. Fuel valves Oil Fuel. 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. Total internal volume of crankcase 98 cu.ft. No. and total area of explosion relief devices 4 - 112 sq.in.
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? Compressed air.
Can the engine be directly reversed? No. If not, how is reversing obtained? Electric Motor Propulsion.

Has the engine been tested working in the shop? Yes How long at full power? 6 hours.
CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 5-5-61. State barred speed range(s), if imposed for working propeller None. For spare propeller None. Is a governor fitted? Yes. Is a torsional vibration damper or detuner fitted to the shafting? NO.

Where positioned? Type No. of main bearings 9 Are main bearings of ball or roller type?
Distance between inner edges of bearings in way of crank(s) 13" 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 8 1/4" ✓ Diameter of crankpins Centre 7 1/2" ✓ Side - Breadth of webs at mid-throw 11 1/8" ✓ Axial thickness of webs 2 1/8" ✓
Pins O.H. Steel. Minimum
If shrunk, radial thickness around eyeholes Are dowel pins fitted? Crankshaft material Journals O.H. Steel. Approved 36T p.s.i. Webs O.H. Steel. Tensile strength
Diameter of flywheel 4' 10 1/2" ✓ Weight 2880 lb. Are balance weights fitted? No. Total weight No. Radius of gyration -
Diameter of flywheel shaft .825- Material O.H. Steel. Minimum approved tensile strength 36 T.p.s.i.
Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Integral with Crankshaft.

501-T
Lit.
22/1/62

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
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 6 KW per generator 1220 at 750 RPM AC or DC? DC Position _____
No. of propulsion motors _____ SHP per motor _____ at _____ RPM Position _____
How is power obtained for excitation of generators? Motor Driven Exciters. Main Gen. Shaft 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 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 a
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? _____ Diameter of intermediate shaft _____ Material _____
Minimum approved tensile strength _____ Diameter of screwshaft cone at large end _____ Is screwshaft fitted with a continuous liner? _____
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 _____ Minimum approved tensile strength _____
Is an approved oil gland fitted? _____ If so, state type _____ Length of bearing next to and supporting propeller _____
Material of bearing _____ 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 _____ Pitch _____ Built up or solid _____ Total developed surface _____

No. of blades _____ Blade thickness at top of root fillet _____ Blade material _____ Moment of inertia of dry propeller _____
If propeller is of special design, state type _____ Is propeller of reversible pitch type? _____ If so, is it of approved design? _____
State method of control _____ Material of spare propeller _____ 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) _____
No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) _____

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

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

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

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) 2 - Lube-oil Pumps (Oil Press. lubrication), 2 - Fuel Injection Pumps.

LR-FAF-TB17-3A Fuel Injection Pumps



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 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 has been constructed under Special Survey in accordance with the Requirements of the Rules, Approved Plans and Secretary's letters.

The materials used in the construction have been tested under the supervision of the Surveyors to the Society, found satisfactory and workmanship good.

The machinery has been examined during full power, overload, fractional loads and governing test bed running and found satisfactory.

The machinery as now seen, is eligible in my opinion to be classed in the Register Book + LMC when efficiently installed and tested.

J. A. M. Gutteridge
 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 'B' Bank - S1957, S1976, S1778, S1975, S1974, S1976, S1996, S1974.
 'A' Bank - S2160, S1974, S1979, S1970, S1974, S2160, S1998, S1970.

CRANKSHAFT OR ROTORSHAFT BEP. 4976. LLOYDS S.H.F. J9767. R.B. 2 - 5 + 61.

FLYWHEEL SHAFT -
 THRUSTSHAFT -
 GEARING -
 INTERMEDIATE SHAFTS -
 SCREW AND TUBE SHAFTS -
 PROPELLERS -

OTHER IMPORTANT ITEMS Turbo-Chargers Type MS200. Nos. 204/2014, 2032, 2035, 2034/16 D.D.
 Lube-oil Cooler - M.L1159. F.W. Circulating Pumps - Nos. F.68309, F.68314.
 Turbo Charger inter Coolers - L.B.3605, L.B.3607, L.B.3608, L.B.3616.

Is the installation a duplicate of a previous case? No. If so, state name of vessel -
 Date of approval of plans for crankshaft 6 - 2 - 61. Straight shafting 5 - 5 - 61. Gearing - Clutch -
 Separate oil fuel tanks Pumping arrangements Oil fuel arrangements
 Cargo oil pumping arrangements Air receivers Donkey boilers
 Dates of examination of principal parts:-
 Fitting of stern tube Fitting of propeller Completion of sea connections Alignment of crankshaft in main bearings
 Engine chocks & bolts Alignment of gearing Alignment of straight shafting Testing of pumping arrangements
 Oil fuel lines Donkey boiler supports Steering machinery Windlass
 Date of Committee LIVERPOOL 7th NOV. 1961 CONSTR. £136-0-0
 Decision Referred for comparison classed LRB Expenses £7-1-0

Date when A/c rendered = 1 NOV 1961



Rpt. 4b
 Date of writing report
 Survey held at
FIRST
 No. in R.B.
 Owners New Zealand
 Hull built at
 Main Engines made
 Gearing made at
 Donkey boilers made
 Machinery installed
 Particulars of restriction
 Particulars of vegetable
 Is ship to be classed for
 Is refrigerating machinery
 Is the refrigerating machinery
 The following particulars
 wording is not applicable
 report need not be re
 No. of main engines
MAIN RECEIPTS
 No. of cylinders per engine
 Maximum approved
 Corresponding MIP
 Are the cylinders arranged
TWO STROKE ENGINE
 Is the exhaust discharge
 engine and how driven
 No. of exhaust gas ducts
 If a stand-by or emergency
 power
FOUR STROKE ENGINE
 engine 4
TWO & FOUR STROKE
 Material of cylinder
 Cooling medium for
 Is the rod fitted with
 underside of pistons?
 devices 4 - 112
 overhaul of bearings,
 Can the engine be driven
 Has the engine been
CRANK & FLYWHEEL
 for working propeller.
 Where positioned?
 type?
 Crankshaft type: Built
 Diameter of journals
 If shrunk, radial thickness
 Diameter of flywheel
 Diameter of flywheel
 Flywheel shaft: separate