

Rpt. 4b

Date of writing report 30.8.1960. Received London Port MANCHESTER. No. 327 387
Survey held at PATRICROFT. No. of visits In shops 6 6.7.60. 2 18.8.60.
On vessel First date Last date

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name Gross tons

Owners Managers Port of Registry Year Month

Hull built at Hong Kong By Taikoo Dockyard 0/N. N.2726/7 Yard No. 486 When

Main Engines made at Patricroft By L. Gardner & Sons. Eng. No. 125706/7 When 60 8

Gearing made at By

Donkey boilers made at By Blr. Nos. 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 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 304 300 RPM of propeller.

Corresponding MIP 120 PSI (For DA engines give MIP top & bottom) Maximum cylinder pressure 850 PFI 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 One Injector

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

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? Plain 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 1/2" Diameter of crankpins Centre 3-5/8" Side Breadth of webs at mid-throw 5 1/2" Axial thickness of webs 1-11/16"

If shrunk, 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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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?

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?.....

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 5.0491¹¹ Second reduction - PCD of wheels: First reduction 14.9454¹¹ 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 24¹¹ Wheel shaft journals 24¹¹ & 34¹¹

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

description and, for clutches, state how operated..... Multiplate Ahead & Astern Clutches, hand lever operated.

Shaft separate or integral with crank or wheel shaft? Diameter of intermediate shaft Material

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

Is an approved oil gland fitted? If so, state type Length of bearing next to and supporting propeller

liners readily visible in dry dock?.....

No. of blades Blade thickness at top of root fillet Blade material Moment of inertia of dry propeller

State method of control..... Material of spare propeller..... Moment of inertia.....

No. of independently driven air compressors. (State capacity, prime mover, 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 in

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

2 Gear type Lubrication Pumps, fitted outside the engine.

[illegible]

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room

No. and size connected to main bilge line in main engine room.....	In tunnel
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In aux. engine room **Size and position of direct bilge suction in machinery spaces**

Size and position of emergency bilge suction in machinery spaces

Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? 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*).

[illegible]

If so, state the minimum No. and capacity of generators required in order that the ship may operate

Is an electric generator driven by Main Engine?

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.

Can the exhaust heated boilers deliver steam directly to

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 the

<p>_____ Is the arrangement of pipes, valves, controls, etc. in accordance with the Rules?.....</p>	<p>No. of oil burning pressure</p>
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material?.....

units..... No. of steam condensers..... No. of Evaporators.....

11. **STEAM ENGINES** (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars)

to fire-fighting arrangements been complied with? Brief description of arrangements

.....

Has the spare gear required by the Rules been supplied?.....

power sea trials of main engines

the ball and the particulars are as approved for torsional vibration characteristics (strike out words not applicable).

For and on behalf of J. Gardner

9. 5. 1943
Boulder

010846-010851

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 main machinery has been constructed under special survey of tested materials in accordance with the Secretary's letters, approved plans and requirements of the Rules; the Torsional Vibration Characteristics have been approved for an engine service speed of 900 R.P.M and corresponding propeller speed of 300 R.P.M. Gear hammer or rough running may take place in the reduction gear in way of the 1 node 3rd order critical speed, calculated to resonate at 276 R.P.M. (Engine), and if considered excessive for continuous operation a restricted speed range may be required. (See Secretary's letter 10.10.60). Materials and workmanship are good, and the engines when tested in the shop under full load conditions coupled to an hydraulic dynamometer showed satisfactory results.

In my opinion this main machinery is suitable for installation in a vessel to be classed with this Society for the purpose intended.

Crankcase explosion devices are not fitted.

Attached hereto:- Extract copy of Sheffield Report 6 No. F.75617 & F.75533,

" " " Birmingham " 10 N o. C.50821, C.51056, C.52863, C.52671

" " " Barrow Cert. Pump No.P.33 06/7.

" " " Manchester Report 10. No. C.4031.

Serck Test Certificate No.19 67/60.

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.138, 138, 134, 138, 138, 132)

CRANKSHAFT ~~OR ROTOR 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 " "

INTERMEDIATE SHAFTS

SCREW AND TUBE SHAFTS

PROPELLERS

OTHER IMPORTANT ITEMS G.G.G. Pump No. P.123591/2 IR.1307/8 10.6.60. JEM.

Serck Coolers N o. LL.3522/3.

Is the installation a duplicate of a previous case? Yes If so, state name of vessel Manchester Report No. 326.

Date of approval of plans for crankshaft 16.5.60. Straight shafting - Gearing 16.5.60. Clutch 16.5.60.

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 crank shaft in main bearings

Engine chocks & bolts Alignment of gearing Alignment of straight shafting Testing of pumping arrangements

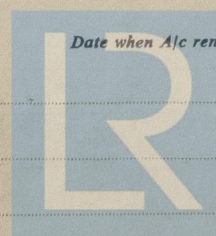
Oil fuel lines Donkey boiler supports Steering machinery Windlass

Date of Committee FRIDAY - 1 SEP 1961 Special Survey Fee £24.15. 0d.

Decision

See LA 4574

Expenses



Date when A/c rendered

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Foundation