

Rpt. 4b

Date of writing report 27-8-59. Received London Southampton. No. 25436. Survey held at Southampton. No. of visits 46. In shops 11-6-58. On vessel 15. First date 15-10-58. Last date 11-5-59.

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name CARISBROOKE CASTLE. Gross tons 671.66. Owners Southampton & I.O.W. Steam Packet Co. Managers. Port of Registry SOUTHAMPTON. Hull built at Woolston Works. By J.I. Thornycroft & Co. Ltd. Yard No. 4183. Year Month When 1959-5. Main Engines made at Manchester. By Crossley Bros. Eng. No. 147629 (Port.) 148310 (Starb.). When 1958. Gearing made at. Donkey boilers made at. Machinery installed at Woolston Works. By J.I. Thornycroft & Co. Ltd. When 1959. Particulars of restricted service of ship, if limited for classification Hot service between Southampton & Cowes.

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 Direct drive to propellers. MAIN RECIPROCATING ENGINES. Licence Name and Type No. Crossley HRN8/45 Bit Engine (See Manchester Report No. 18798 for details). No. of cylinders per engine. Dia. of cylinders. stroke(s). 2 or 4 stroke cycle. Single or double acting. Maximum approved BHP per engine at RPM of engine and RPM of propeller. Corresponding MIP. (For DA engines give MIP top & bottom) Maximum cylinder pressure. Machinery numeral. Are the cylinders arranged in Vee or other special formation? If so, number of crankshafts per engine.

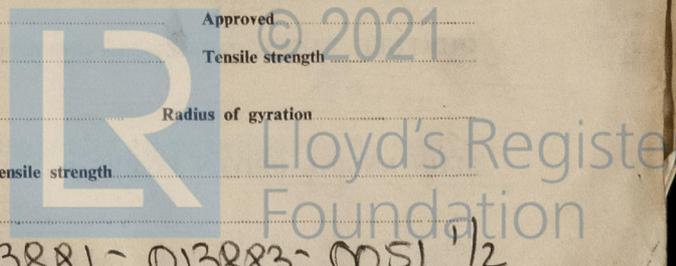
TWO STROKE ENGINES. Is the engine of opposed piston type? If so, how are upper pistons connected to crankshaft? Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers? No. and type of mechanically driven scavenge pumps or blowers per engine and how driven. 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? Are the undersides of the pistons arranged as supercharge pumps? No. of exhaust gas driven blowers per engine. No. of supercharge air coolers per engine. Supercharge air pressure. Can engine operate without supercharger?

TWO & FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel. Inlet. Exhaust. Starting. Safety. Material of cylinder covers. Material of piston crowns. Is the engine equipped to operate on heavy fuel oil? Cooling medium for: Cylinders. Pistons. Fuel valves. Overall diameter of piston rod for double acting engines. Is the rod fitted with a sleeve? Is welded construction employed for: Bedplate? Frames? Entablature? Is the crankcase separated from the underside of pistons? Is the engine of crosshead or trunk piston type? Total internal volume of crankcase. No. and total area of explosion relief devices. Are flame guards or traps fitted to relief devices? Is the crankcase readily accessible? If not, must the engine be removed for overhaul of bearings, etc? Is the engine secured directly to the tank top or to a built-up seating? How is the engine started? Air starting. Can the engine be directly reversed? Yes. If not, how is reversing obtained? Has the engine been tested working in the shop? How long at full power?

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 19-2-58. State barred speed range(s), if imposed for working propeller. For spare propeller. 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? No. Distance between inner edges of bearings in way of crank(s). Distance between centre lines of side cranks or eccentrics of opposed piston engines.

Crankshaft type: Built, semi-built, solid. (State which). Diameter of journals. Diameter of crankpins. Centre. Breadth of webs at mid-throw. Axial thickness of webs. Side. Pins. Minimum. If shrunk, radial thickness around eyeholes. Are dowel pins fitted? Crankshaft material Journals. Approved. Webs. Tensile strength. Diameter of flywheel. Weight. Are balance weights fitted? Total weight. Radius of gyration. Diameter of flywheel shaft. Material. Minimum approved tensile strength. Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which).



013881-013883-0051 1/2

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? _____ 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 shaft 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 brief 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 5 3/4 Material Forged Steel Minimum approved tensile strength _____ Tons/sq. in.

Shaft separate or integral with crank or wheel shaft? Separate Diameter of intermediate shaft 5 1/8 Material Forged Steel

Minimum approved tensile strength 28 Tons/sq. in. Diameter of screwshaft cone at large end 6 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 _____

Thickness between bearings _____ Material of screw/tube shaft Forged Steel Minimum approved tensile strength 28 Tons/sq. in.

Is an approved oil gland fitted? Yes. If so, state type U.S. Metallic Packing Co. Length of bearing next to and supporting propeller 25 1/2

Material of bearing G.M. White metal lined 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 5'-4" Pitch 4'-6" Built up or solid Solid Total developed surface 16.46 sq. ft.

No. of blades 4 Blade thickness at top of root fillet 2.625 Blade material Mang. Bronze Moment of inertia of dry propeller Wt. = 288,000 lbs. in.

If propeller is of special design, state type _____ Is propeller of reversible pitch type? No. 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) Two - 28 c. ft. I.A.D. Hamworthy Air Compressors

One - Port side Eng. Room driven by R.H. Oil Engine. North Cent. No. C.28356. One - Port side Eng. Room Forward driven by H.P. Electric motor

Compressor. South Cent. No. D.12548. One - Port side Eng. Room Forward driven by H.P. Electric motor. South Cent. No. D.12361

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 4 - 15 c. ft. each placed on port side Eng. Rm

How are receivers first charged? By Diesel driven Comp. Hand starting. Maximum working pressure of starting air system 350 lbs/sq. in. Are the safety devices 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 One each engine. No. of main engine lubricating oil coolers One each engine.

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure Two service tanks in Eng. Room Casings.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) One - S.W. Circulating Pump } on each engine.
One - Bilge Pump }
 2 - Lub. Oil Pumps }

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	SUCTION										DELIVERY				
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed Tanks	Lub. Oil	Ballast Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling	Over Board
2 - M.E. Cooling Water Pumps. One port, one starboard 180 G.P.M. Electric driven.					X					X					
Bilge & S.P. Pump. Starboard forward.	X	X	X			X			X			X			X
Bilge & S.P. Pump. Starboard aft. Electric driven. 40 Tons/hour.	X	X	X			X			X			X			X
Fire Service Pump. Starboard. E.R. Electric driven. 25 Tons/hour.						X						X			
Fuel Transfer Pump. Starboard. E.R. Electric driven. 2 1/2 Tons/hour.					X						X				

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room. Forward Comp. - One - 2" Centre suction.
No. 2 & 3 Comp. Forward - 2" Port & Starboard suction in each (Total 4 off). Aft. Comp. - 2" Port, Centre & Starboard suction (Total 3 off).

No. and size connected to main bilge line in main engine room 2 Port & 2 Starboard - 2 1/2" W.P. suction. In tunnel 2 - 2 1/2" suction.

In aux. engine room _____ Size and position of direct bilge suction in machinery spaces 3" Port Starboard suction.

Size and position of emergency bilge suction in machinery spaces 3" on Centre line

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? 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)
Port side Eng. Room.	DW4/1350 Oil Engine	Crosby Bros.	Manchester, Cert. No. 18609	50 KW. Generator.
Starboard side Eng. Room. Aft.	do.	No. 146383	" " " "	" " " "
Starboard side Eng. Room. Forward.	do.	No. 146384	" " " "	" " " "
Port side Eng. Room.	do.	No. 146385	" " " "	" " " "
Port side Eng. Room.	Ruston & Hornsby Oil Engine.	Ruston & Hornsby	Nottingham " " C.28356	Hamworthy Air Comp. No. 21813/1.
				No. 425882.

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 - 50 K.W. Generator.

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? _____

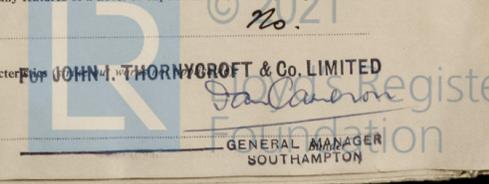
For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? _____ No. of oil burning pressure units _____ No. of steam condensers _____ No. of Evaporators _____

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) One "Hyland" two ram electric driven hydraulic steering gear unit, Type 2TT90. Serial No. 1262. Type 3VI Oil pump unit driven by 4 1/2 H.P. Electric motor.

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes. Brief description of arrangements 3 - Electric driven pumps on fire main. One - Downston hand pump in Cor-deck space. One - 30 gallon foam ext., 2 - 2 gall. portable ext. & One - 25 lb. dry chemical ext. in Eng. Room. One - Sand bin.

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 16-4-59 - 4 hours at full power. Does this machinery installation contain any features of a novel or experimental nature? No.

The foregoing description of the main engine and installation is correct and the particulars are as approved for torsional vibration character by JOHN I. THORNYCROFT & Co. LIMITED



00512/2

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 vessel has been manufactured and installed under special survey in accordance with the Rules, approved plans and the Secretary's letters.

The materials used and workmanship are of good quality.

The machinery has been examined under working conditions on full power trials at sea and proved satisfactory.

The machinery of this vessel is eligible, in my opinion, for classification with the notation of +LMC.E.S. 5.59 and T.S. 09.

NOTE: The Owners intend to replace the existing 4 cyl. Diesel Generators with 6 cyl. units being supplied by Crossley Bros. on account of complaints about vibration which is affecting the passenger accommodation.

A. Pemberton

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

CRANKSHAFT OR ROTORSHAFT

FLYWHEEL SHAFT

THRUSTSHAFT

GEARING

INTERMEDIATE SHAFTS ~~2368A~~; 2368B; 2382; 2398; 2405; 2409; 2410; 2471. BHM.

SCREW AND TUBE SHAFTS Starbd. 2370, Port. 2366. Half Couplings 2472. BHM.

PROPELLERS Starbd. 795, Port. 795 - SOU.

OTHER IMPORTANT ITEMS Spare screwshaft. 2343. BHM.

Is the installation a duplicate of a previous case? No. If so, state name of vessel _____

Date of approval of plans for crankshaft. Straight shafting 21-2-58. Gearing _____ Clutch _____

Separate oil fuel tanks 25-7-58. Pumping arrangements 22/1 + 9/6 - 58. Oil fuel arrangements 22-1-58.

Cargo oil pumping arrangements _____ Air receivers _____ Donkey boilers _____

Dates of examination of principal parts:—

Fitting of stern tube 25-10-58. Fitting of propeller 26-11-58. Completion of sea connections 26-11-58. Alignment of crankshaft in main bearings _____

Engine chocks & bolts 27-1-59. Alignment of gearing _____ Alignment of straight shafting 22-1-59. Testing of pumping arrangements 12-2-59.

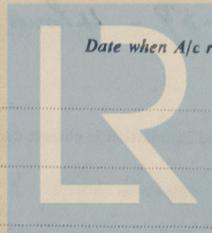
Oil fuel lines 12-2-59. Donkey boiler supports _____ Steering machinery 14-4-59. Windlass 14-4-59.

Date of Committee FRIDAY 18 SEP 1959

Decision See Rpt. 1. Special Survey Fee £96.0.0. Shop testing £15.0.0.

Expenses £9.10.0.

Date when A/c rendered 31/8/59



Lloyd's Register
Foundation