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## Rpt. 4b

Date of writing report 4.7.63 Received London \_\_\_\_\_ Port MANCHESTER No. 840  
 Survey held at MANCHESTER No. of visits 12 In shops 14.3.63 Last date 12.6.63  
 On vessel \_\_\_\_\_

## FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. \_\_\_\_\_ Name "RAYLIGHT" Gross tons 177  
 Owners Ross & Marshall Ltd., Managers ROSS & MARSHALL LTD. Port of Registry GREENOCK  
 Hull built at Greenock By Scotts Shipbuilding & Engrs. Ltd. Yard No. 695 Year 63 Month 9  
 Main Engines made at Openshaw By Crossley Bros. Ltd., Cont: 16424 Eng. No. 148466 When 63 6  
 Gearing made at \_\_\_\_\_ By \_\_\_\_\_ Gear No. \_\_\_\_\_ When \_\_\_\_\_  
 Aux./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

If ship is to be classed for navigation in ice, state whether Class 1, 2 or 3

Is ship an oil tanker?

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 should 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 all other relevant particulars must be given and the port and report number should be stated.

No. of main engines One No. of propellers One Brief description of propulsion system Heavy Oil Engine driving thro 3.75:1 MWD. Gearbox & Metalastik coupling.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Crossley EGL6/75 Type.

No. of cylinders per engine 6 ✓ Dia. of cylinders 7" ✓ stroke(s) 9" ✓ 2 or 4 stroke cycle Two Single or double acting Single.

Maximum BHP per engine approved for this installation 300 ✓ at 750 ✓ RPM of engine and 200 ✓ RPM of propeller.

Corresponding MIP 92 ✓ (For DA engines give MIP top & bottom) Maximum cylinder pressure 1280 PSI Machinery numeral 60 ✓

Are the cylinders arranged in Vee or other special formation? No If so, number of crankshafts per engine \_\_\_\_\_

TWO STROKE ENGINES. Is the engine of opposed piston type? No 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? Ports No. and type of mechanically driven scavenge pumps or blowers per engine and how driven One gear

No. of exhaust gas driven scavenge blowers per engine None 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? Yes

TWO AND 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 \_\_\_\_\_ Supercharge air pressure \_\_\_\_\_ Can engine operate without supercharger? \_\_\_\_\_

No. of valves per cylinder: Fuel One Inlet Two Exhaust \_\_\_\_\_ Starting One Safety One

Material of cylinder covers Cast Iron Material of piston crowns Cast Iron Is the engine equipped to operate on heavy fuel oil? No

Cooling medium for :-Cylinders Fresh Water Pistons Oil Splash Fuel valves \_\_\_\_\_ 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 Total internal volume of crankcase 19.14 ✓ No. and total area of explosion relief

devices 2 x 16.18 ✓ 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? \_\_\_\_\_ How is the engine started? Compressed Air

Can the engine be reversed? No If not, how is reversing obtained? by gearbox.

Has the engine been tested working in the shop? Yes How long at full power? 5 hours.

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 6.3.63 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 7 Are main bearings of ball or roller

type? plain Distance between inner edges of bearings in way of crank(s) 8-7/8" 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 4 3/4" ✓ Diameter of crankpins 4 3/4" ✓ Centre ) Breadth of webs at mid-throw As appd. Axial thickness of webs As appd.

If shrunk, radial thickness around eyeholes \_\_\_\_\_ Are dowel pins fitted? \_\_\_\_\_ Crankshaft material: Journals } Pins } Oil } Minimum } 45/55

\_\_\_\_\_ Webs } Steel } Tensile strength } T/in 2

Diameter of flywheel 28" ✓ Weight 592 ✓ Are balance weights fitted? Yes Total weight 2.095 kg.M<sup>2</sup> Radius of gyration \_\_\_\_\_

Diameter of flywheel shaft \_\_\_\_\_ Material \_\_\_\_\_ Minimum approved tensile strength \_\_\_\_\_

Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Integral.

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and found satisfactory? \_\_\_\_\_ Date and duration of full-  
\_\_\_\_\_  
any features of a novel or experimental nature? (*Give particulars*)  
\_\_\_\_\_  
\_\_\_\_\_  
characteristics. (*Strike out words not applicable.*)  
*Nat* From CROSSLEY BROTHERS LTD  
OPENSHAW, MANCHESTER, 11.



## 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 heavy oil engine has been constructed under special survey of tested materials and in accordance with the Rules, approved plans and Secretary's letters. The materials and workmanship are good. The engine coupled to a dynamometer was tested at the Engine Builders works and the governor tested and all found satisfactory.

In my opinion this engine when properly installed on the ship and sea trials witnessed by a Surveyor is eligible for the notation +LMC with date.

Attached Certs. Crank BHM. 8449.

SC. Crank LON. D. 7623

Air Receiver

Conn. Rod. Cert. C. 56387

*James L. Murray*  
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 BHM. 177 23.8.62

CRANKSHAFT OR ROTOR SHAFT LR. BHM. 772 & JCM 15.3.63  
Scavenge  
FLYWHEEL SHAFT LON. 6932 & JCM 29.3.63.

THRUST SHAFT

GEARING

INTERMEDIATE SHAFTS

SCREW AND TUBE SHAFTS

PROPELLERS

OTHER IMPORTANT ITEMS

Is the installation a duplicate of a previous case? Cont. 16255

If so, state name of vessel

Date of approval of plans for crankshaft 27.11.53

Straight shafting

Gearing

Clutch

Separate oil fuel tanks

Pumping arrangements

Oil fuel arrangements

Cargo oil pumping arrangements

Air receivers

Aux. 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 27.3.63

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

Special Survey Fee

£32. 0. 0d.

Decision

Expenses

£ 1. 5. 0d.

Date when A/c rendered



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