

# REPORT ON OIL ENGINE MACHINERY.

Msb. Rpt. No. 19748.

No. 109240

Date of writing Report 19... When handed in at Local Office **15 MAR 1952** Port of **NEWCASTLE-ON-TYNE** Received at London Office **19 MAR 1952**

No. in Reg. Book. Survey held at **NEWCASTLE ON TYNE** Date, First Survey **3rd August 1949** Last Survey **21 February 1952** Number of Visits **39**

Single on the Twin Triple Quadruple Screw vessel **M.V. "LUCERNA"**

Built at **SOUTHBANK ON TEES** By whom built **SMITHS DOCK CO. LD.** Tons Gross... Net...

Engines made at **NEWCASTLE ON TYNE** By whom made **RAW HAWTHORN LESLIE & CO. LD.** Yard No. **1215** When built...

Donkey Boilers made at... By whom made... Engine No. **4084** When made **1951**

Brake Horse Power **5500** MAX 2 SERVICE Owners. Boiler No. ... When made...

M.N. Power as per Rule **126** (NEW MN 1100) Is Refrigerating Machinery fitted for cargo purposes... Port belonging to...

Trade for which vessel is intended **OPEN SEA SERVICE** Is Electric Light fitted...

OIL ENGINES, &c. — Type of Engines **HAWTHORN-DOXFORD OPPOSED PISTON** 2 or 4 stroke cycle **2** Single or double acting **SINGLE**

Maximum pressure in cylinders **640 LBS/□"** Diameter of cylinders **670 mm** Length of stroke **2320 mm** No. of cylinders **5** No. of cranks **5** THREE-THROW

Mean Indicated Pressure **89 LBS/□"** Ahead Firing Order in Cylinders **1.3.5.4.2**

from inner edge to inner edge **2020 mm** Span of bearings, adjacent to the crank, measured BETWEEN EA. **3-THROW** Revolutions per minute **112**

TURNING dia. **98.384"** Weight **1.12 TNS** Moment of inertia of flywheel (lbs. in<sup>2</sup> or Kg. cm<sup>2</sup>) **0.497** Means of ignition **COMP.** Kind of fuel used **HEAVY OIL**

Crank Shaft, Solid forged Semi built All built dia. of journals as per Rule **APPROVED** as fitted **520 mm** Crank pin dia. **520 mm** Crank webs Mid. length breadth **730 mm** Mid. length thickness **290 mm** Crank Thickness parallel to axis **290 mm** Thickness around eyehole **215 mm**

Flywheel Shaft, diameter as per Rule... as fitted... Intermediate Shafts, diameter as per Rule... as fitted **17 1/2"** Thrust Shaft, diameter at collars as per Rule... as fitted **520 mm**

Tube Shaft, diameter as per Rule... as fitted... Screw Shaft, diameter as per Rule... as fitted **17 1/2"** Is the (tube) shaft fitted with a continuous liner **YES**

Bronze Liners, thickness in way of bushes as per Rule... as fitted **13/16"** Thickness between bushes as per Rule... as fitted **45/64"** Is the after end of the liner made watertight in the propeller boss **YES** If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner **IN ONE LENGTH**

If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive... If two liners are fitted, is the shaft lapped or protected between the liners... Is an approved Oil Gland or other appliance fitted at the after end of tube shaft... If so, state type...

Propeller, dia. **18'-0"** Pitch **12.97 FT TO 10.15 FT** No. of blades **4** Material **M. BRONZE** whether moveable **NO** Total developed surface **115** sq. feet

Moment of inertia of propeller (lbs. in<sup>2</sup> or Kg. cm<sup>2</sup>) **6.44** Kind of damper, if fitted **DOXFORD-BIBBY DETUNER. (SEE OVERLEAF)**

Method of reversing Engines **COMPRESSOR AIR** Is a governor or other arrangement fitted to prevent racing of the engine when declutched... YES Means of lubrication **FORCED** Thickness of cylinder liners **25 mm** Are the cylinders fitted with safety valves **YES** Are the exhaust pipes and silencers water cooled or lagged with non-conducting material **LAGGED** If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine... Cooling Water Pumps, No. ... Is the sea suction provided with an efficient strainer which can be cleared within the vessel...

Bilge Pumps worked from the Main Engines, No. **NONE** Diameter... Stroke... Can one be overhauled while the other is at work... Pumps connected to the Main Bilge Line (No. and size... How driven... Is the cooling water led to the bilges... If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements...

Ballast Pumps, No. and size... Power Driven Lubricating Oil Pumps, including spare pump, No. and size... Are two independent means arranged for circulating water through the Oil Cooler... Suctions, connected to both main bilge pumps and auxiliary bilge pumps, No. and size:—In machinery spaces... In pump room...

Independent Power Pump Direct Suctions to the engine room bilges, No. and size... Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes... Are the bilge suction in the machinery spaces led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges... Are all Sea Connections fitted direct on the skin of the Ship... Are they fitted with valves or cocks... Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates... Are the overboard discharges above or below the deep water line... Are they each fitted with a discharge valve always accessible on the plating of the vessel... Are the blow off cocks fitted with a spigot and brass covering plate... That pipes pass through the bunkers... How are they protected... That pipes pass through the deep tanks... Have they been tested as per Rule...

Are all pipes, cocks, valves and pumps in connection with the machinery and all boiler mountings accessible at all times... Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another... Is the shaft tunnel watertight... Is it fitted with a watertight door... worked from...

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012827-012835-0301



**AIR RECEIVERS:**—Have they been made under survey YES. State No. of report or certificate -  
 Is each receiver, which can be isolated, fitted with a safety valve as per Rule YES.  
 Can the internal surfaces of the receivers be examined and cleaned YES. Is a drain fitted at the lowest part of each receiver YES.  
 Injection Air Receivers, No. NONE Cubic capacity of each - Internal diameter - thickness -  
 Seamless, welded or riveted longitudinal joint - Material - Range of tensile strength - Working pressure -  
 Starting Air Receivers, No. TWO Total cubic capacity 300 CU. FT. Internal diameter 4'-1 3/8" thickness 1 5/16"  
 Seamless, welded or riveted longitudinal joint E. WELDED Material M. S. Range of tensile strength SHELL: 28/32 TNS/10" Working pressure Actual: 600 LBS  
 ENDS: 26/30 TNS/10"

**IS A DONKEY BOILER FITTED** - If so, is a report now forwarded -  
 Is the donkey boiler intended to be used for domestic purposes only -  
**PLANS.** Are approved plans forwarded herewith for shafting YES. Receivers AS PER ENG. No 4059. Separate fuel tanks -  
 Donkey boilers - General pumping arrangements - Pumping arrangements in machinery space -  
 Oil fuel burning arrangements -  
 Have Torsional Vibration characteristics been approved YES. Date of approval 26. 7. 51.  
**SPARE GEAR.** (Freq. calc. sheet appd) Yes.  
 Has the spare gear required by the Rules been supplied YES.  
 State the principal additional spare gear supplied AS PER ATTACHED LISTS.

**DOXFORD-BIBBY DETUNER PARTICULARS.** FIXED MEMBER  $WK^2 = 4.5 \text{ TNS. FT.}^2$   
 FLOATING " " =  $11.0 \text{ TNS. FT.}^2$

The foregoing is a correct description and the particulars of the installation as fitted are as approved for the Torsional Frequency Calculations.  
 Manufacturer R. & W. HAWTHORN LESLIE & CO. LIMITED

Dates of Survey while building  
 During progress of work in shops - (1949) AUG. 3. DEC. 6. (1951) MAR. 6. 7. 22. 28. APR. 3. 6. MAY. 2. SEPT. 3. 11. 25. 27. OCT. 3. 5. 9. 11. 15. 17. 19. 23. 25. 29. 31. Nov. 2. 6. 12. 14. 16.  
 During erection on board vessel - 22. 26. DEC. 6. 12. 14. 18. (1952) JAN. 14. 16. FEB. 29.  
 Total No. of visits NWC. 39.  
 Dates of examination of principal parts—Cylinders LINERS 6. 3. 51 ETC. Covers - Pistons 11. 10. 51 ETC. Rods 11. 10. 51 ETC. Connecting rods 15. 10. 51  
 Crank shaft 3. 10. 51. Flywheel shaft - Thrust shaft 3. 10. 51. Intermediate shafts 10. 1. 52 ETC. Tube shaft -  
 Screw shaft 12. 2. 16. 1. 52. Propeller - Stern tube 29. 2. 52 Engine seatings - Engine holding down bolts -  
 Completion of fitting sea connections - Completion of pumping arrangements - Engines tried under working conditions IN SHOP 26. H. 51.  
 Crank shaft, material F. O. H. I. S. Identification mark EB. 12. 9. 51 Flywheel shaft, material F. O. H. I. S. Identification mark EB. 10. 10. 51  
 Thrust shaft, material F. O. H. I. S. Identification mark IN CRANKSHAFT Intermediate shafts, material F. O. H. I. S. Identification mark EB. 16. 10. 51  
 Tube shaft, material - Identification mark - Screw shaft, material F. O. H. I. S. Identification mark EB. 25. 10. 51  
 Identification marks on air receivers " LLOYDS TEST. TP. 950 LBS. WP. 600 LBS. AB. 16. 11. 51.

Welded receivers, state Makers' Name R & W. HAWTHORN LESLIE & CO. LD. NEWCASTLE.  
 Is the flash point of the oil to be used over 150°F -  
 Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with -  
 Description of fire extinguishing apparatus fitted -  
 Is the vessel (not being an oil tanker) fitted for carrying oil as cargo - If so, have the requirements of the Rules been complied with -  
 If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with -  
 Is this machinery duplicate of a previous case No. If so, state name of vessel -

**General Remarks** (State quality of workmanship, opinions as to class, Speed restrictions, &c.)  
The Engine etc. referred to herein has been constructed under Special Survey in accordance with the approved plans, Secretary's letters, and Rule Requirements  
The material & workmanship are good.  
The engine has been despatched to Southbank on Tees for installation in Messrs Smiths Dock to the Ship No. 1215.

The amount of Entry Fee £ 191 15 0  
 Special £ 20 10 0  
 Donkey Boiler Fee... £ 8 0 0  
 Travelling Expenses (if any) £ - - -  
 When applied for 19 MAR 1952  
 When received 19  
**TUES. 30 DEC 1952**

W. Butler  
 Engineer Surveyor to Lloyd's Register of Shipping  
 Lloyd's Register Foundation

Assigned Sir F. E. Moly. Apt. No. 19748

(The Surveyors are requested not to write on or below the space for Committee's Minute.)  
 Certificates (if required) to be sent to...