

# REPORT ON OIL ENGINE MACHINERY.

No. 106731

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NEWCASTLE-on-TYNE

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No. in Reg. Book 35288 Supplement on the Twin Survey held at WALLSEND-ON-TYNE & SUNDERLAND Date, First Survey 29.9.48 Last Survey 1.11.49 Number of Visits 66

Single Triple Screw vessel M.V. "LEXA MAERSK" Tons Gross 5720.19 Net 3270.18

Built at SUNDELLAND By whom built BARTHAM & SONS L<sup>td</sup> Yard No. 327 When built 1949

Engines made at WALLSEND-ON-TYNE By whom made NORTH EASTERN MARINE ENG CO (1938) L<sup>td</sup> Engine No. 3163 When made 1949

Donkey Boilers made at STOCKTON-ON-TEES By whom made STOCKTON CE & RB L<sup>td</sup> Boiler No. 7112 When made 1949

Brake Horse Power 5500 Owners A/S D/S SVENDBERG & D/S of 1912 A/S Port belonging to COPENHAGEN

M.N. Power as per Rule 1114 NHP 1077 Is Refrigerating Machinery fitted for cargo purposes YES Is Electric Light fitted YES

Trade for which vessel is intended OPEN SERVICE.

**OIL ENGINES, &c.** — Type of Engines NORTH EASTERN MARINE - DOXFORD 2 or 4 stroke cycle 2 Single or double acting SINGLE

Maximum pressure in cylinders 640 LBS/D Diameter of cylinders 670 Length of stroke 2320 No. of cylinders 5 No. of cranks 5 (THREE THROW)

Mean Indicated Pressure 88 LBS/D Ahead Firing Order in Cylinders 1-2-4-5-3 Span of bearings, adjacent to the crank, measured from inner edge to inner edge 2030 Is there a bearing between each crank BETWEEN EACH Revolutions per minute 115

DETUNEL DIA 1710 Weight 3.75 TONS Moment of inertia of flywheel 46 lbs. in<sup>2</sup> or Kg.cm.<sup>2</sup> Kind of fuel used HEAVY OIL

DETUNEL 0.466 TONS/SEC MEANS OF IGNITION COMPRESSION

DETUNEL 0.497 TONS/SEC Kind of fuel used HEAVY OIL

Crank Shaft, Solid forged dia. of journals as per Rule APPROVED as fitted 520 Crank pin dia. 520 Crank webs Mid. length breadth 730 Thickness parallel to axis 290

as per Rule 15 as fitted 15 5/8 Thrust Shaft, diameter at collars as per Rule 15 as fitted 15 5/8

Flywheel Shaft, diameter as per Rule 15 as fitted 15 5/8 Tube Shaft, diameter as per Rule 16.42 as fitted 17 3/8 Is the tube screw shaft fitted with a continuous liner YES

Screw Shaft, diameter as per Rule 25.67 as fitted 27.32 Thickness between bushes as per Rule 19.25 as fitted 21.32

Bronze Liners, thickness in way of bushes as per Rule 25.67 as fitted 27.32 Thickness between bushes as per Rule 19.25 as fitted 21.32 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 YES

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 YES If two liners are fitted, is the shaft lapped or protected between the liners YES Is an approved Oil Gland or other appliance fitted at the after end of tube shaft NO If so, state type NO Length of bearing in Stern Bush next to and supporting propeller 5'-10"

Propeller, dia. 5200 Pitch 44.82 No. of blades 4 Material BRONZE whether moveable NO Total developed surface 9.31 METRES sq. feet

Moment of inertia of propeller 5.1988 TONS FT. SEC<sup>2</sup> Kind of damper, if fitted NONE

Method of reversing Engines HAND LEVER Is a governor or other arrangement fitted to prevent racing of the engine when disengaged YES Means of lubrication FORCED Thickness of cylinder liners 25 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 YES Cooling Water Pumps, No. 2 Is the sea suction provided with an efficient strainer which can be cleared within the vessel YES

Bilge Pumps worked from the Main Engines, No. NONE Diameter YES Stroke YES Can one be overhauled while the other is at work YES

Pumps connected to the Main Bilge Line No. and size ONE BILGE PUMP 100 TONS/HK ONE BALLAST PUMP 330 TONS/HK ONE 95 PUMP 50 TONS/HK How driven ELEC ELEC ELEC

Is the cooling water led to the bilges NO If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements NO

Ballast Pumps, No. and size ONE 330 TONS/HK Power Driven Lubricating Oil Pumps, including spare pump, No. and size TWO EACH 55 TONS/HK

Are two independent means arranged for circulating water through the Oil Cooler YES Suctions, connected to both main bilge pumps and auxiliary bilge pumps, No. and size: 1-3 PORT PIP 1-3 STAR PIP 1-3 STAR PIP 1-2 1/2 DIA CENTRAL OFFEROM 1-2 1/2 DIA PIPE TO TUNNEL 1-2 1/2 DIA TUNNEL FROM pump room

In holds, &c. M1 HOLD 1-3'S N2 HOLD 1-3'S N3 HOLD 1-3'S N4 HOLD 1-3'S N5 HOLD 1-3'S N5 TUNNEL RECESS TOP 1-3'S M1, 2, 3, 4 DEEP TANKS EACH 1-3'S

Independent Power Pump Direct Suctions to the engine room bilges, No. and size 1-5 1/4 DIA PORT 1-5 1/2 DIA STARBOARD

Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes YES 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 YES

Are all Sea Connections fitted direct on the skin of the Ship NO Are they fitted with valves or cocks BOTH Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates YES Are the overboard discharges above or below the deep water line ABOVE

Are they each fitted with a discharge valve always accessible on the plating of the vessel YES Are the blow off cocks fitted with a spigot and brass covering plate YES

What pipes pass through the bunkers NONE How are they protected YES

What pipes pass through the deep tanks NONE Have they been tested as per Rule YES

Are all pipes, cocks, valves and pumps in connection with the machinery and all boiler mountings accessible at all times YES

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 YES Is the shaft tunnel watertight YES Is it fitted with a watertight door YES worked from UPPER DECK LEVEL

If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork YES

Main Air Compressors, No. NONE No. of stages 1 diameters 1 stroke 1 driven by 1

Auxiliary Air Compressors, No. TWO No. of stages THREE diameters EACH 125 cm ft. stroke FREE AIR/MIN driven by ELEC: MOTOR

Small Auxiliary Air Compressors, No. ONE No. of stages ONE diameters 25 cm ft. stroke FREE AIR/MIN driven by STEAM ENGINE

What provision is made for first charging the air receivers SMALL STEAM COMPRESSOR & DONKEY BOILER

Scavenging Air Pumps, No. ONE diameter 1780 stroke 1380 driven by MAIN ENGINE CRANKSHAFT

Auxiliary Engines crank shafts, diameter as per Rule APPROVED No. 3 EACH 150 KW Position 1- BURN DIESEL ENG FOR 2015 125881

as fitted 150 KW - JOURNALS 5 3/4 CRANKPINS 3 1/4 Position EMERGENCY GENERATOR ROOM

Have the auxiliary engines been constructed under special survey 150 KW YES Is a report sent herewith 150 KW YES EMERGENCY GENERATOR ROOM SEA SUNDERLAND ELEC REPORT FOR CERTIFICATE.

4220-669M

SMK 7/11/49

**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... *FUSIBLE PLUG FITTED TO EACH RECEIVER*  
 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. ... ✓ Cubic capacity of each... ✓ Internal diameter... ✓ thickness... ✓  
 Seamless, welded or riveted longitudinal joint... ✓ Material... ✓ Range of tensile strength... ✓ Working pressure... by Rules... ✓ Actual... ✓  
 Starting Air Receivers, No. *2* Total cubic capacity... *EACH 150 cu ft* Internal diameter... *4'-0 1/4"* thickness... *1 3/32"*  
 Seamless, welded or riveted longitudinal joint... *RIVETED* Material... *MILD STEEL* Range of tensile strength... *26 1/2 TONS* Working pressure... by Rules... *6 1/2 LBS* Actual... *6.00 LBS*

**IS A DONKEY BOILER FITTED** *YES* ✓ If so, is a report now forwarded... *YES* ✓  
 Is the donkey boiler intended to be used for domestic purposes only... *NO*  
**PLANS.** Are approved plans forwarded herewith for shafting... *STRAIGHT SHAFTING 5.3.48* Receivers... *14.7.48* Separate fuel tanks... *7.4.48*  
 Donkey boilers... ✓ General pumping arrangements... *19.11.48* Pumping arrangements in machinery space... *18.1.49*  
 Oil fuel burning arrangements... *7.1.49*

Have Torsional Vibration characteristics been approved... *Yes* ✓ Date of approval... *5/3/48* with amended test report of 33-41  
**SPARE GEAR.**  
 Has the spare gear required by the Rules been supplied... *Yes* ✓  
 State the principal additional spare gear supplied... *AS PER ATTACHED LIST.*

*The foregoing is a correct description, & THE PARTICULARS OF THE INSTALLATION AS FITTED ARE AS APPROVED FOR TORSIONAL VIBRATION CHARACTERISTICS.*  
 Manufacturer... *THE NORTH EASTERN MARINE ENGINEERING CO. (LONDON) LTD.*

**DIRECTOR**  
 Dates of Survey while building... During progress of work in shops... During erection on board vessel...  
 Total No. of visits... *66*

Dates of examination of principal parts—Cylinders... *4.1.49 etc* Covers... ✓ Pistons... *6.4.49* Rods... *6.4.49* Connecting rods... *6.4.49*  
 Crank shaft... *13.4.49* Flywheel shaft... ✓ Thrust shaft... ✓ Intermediate shafts... *23.5.49* Tube shaft... ✓  
 Screw shaft... *23.5.49* Propeller... *23.5.49* Stern tube... *25.4.49* Engine seatings... ✓ Engine holding down bolts... *11.8.49*  
 Completion of fitting sea connections... *2.6.49* Completion of pumping arrangements... *7.10.49* Engines tried under working conditions... *1.11.49*  
 Crank shaft, material... *STEEL* Identification mark... *EB 27.10.48* Flywheel shaft, material... ✓ Identification mark... ✓  
 Thrust shaft, material... ✓ Identification mark... ✓ Intermediate shafts, material... *STEEL* Identification marks... ✓  
 Tube shaft, material... ✓ Identification mark... ✓ Screw shaft, material... *STEEL* Identification mark... *Lloyds N 53109*  
 Identification marks on air receivers... *01 Lloyds Test 800 LBS WP 600 LBS AW. 13.4.49* *02 Lloyds Test 800 LBS WP 600 LBS AW. 13.4.49* *03 Lloyds N 53032 EB 11.3.49 T.A.O. 23.5.49* *04 " N 53042 EB 27.3.49 T.A.O. 23.5.49* *05 " N 53070 EB 5.4.49 T.A.O. 23.5.49* *06 " N 53071 EB 1.4.49 T.A.O. 23.5.49* *07 " N 53072 EB 5.4.49 T.A.O. 23.5.49* *08 " N 53069 EB 1.4.49 T.A.O. 23.5.49*

Welded receivers, state Makers' Name... ✓  
 Is the flash point of the oil to be used over 150°F... *YES* ✓  
 Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with... *YES* ✓  
 Description of fire extinguishing apparatus fitted... *AS PER ATTACHED LIST (APPROVED 17.10.49)*  
 Is the vessel (not being an oil tanker) fitted for carrying oil as cargo... *YES* ✓ If so, have the requirements of the Rules been complied with... *YES* ✓  
 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, &c... *The machinery of this vessel has been constructed & installed under special survey. The materials & workmanship are good. Satisfactory basin & sea trials were witnessed & the machinery is eligible in my opinion for the record of LMC 11.49, T.S.C.L. - OIL ENGINE - LOWEEC DB & VAPOR DB 100 LBS*

The amount of Entry Fee ... £ :  
 Special *1114 M.N.* ... £ *286* : *8*  
 2 Air Receivers Each *150 cu ft* ... £ *8* : *0*  
 Donkey Boiler Fee ... £ *8* : *0*  
 Elec. Welding Costs *82 TONS* ... £ *21* : *15*  
 Travelling Expenses (if any) ... £ :  
 When applied for... *16 NOV 1949*  
 When received... *19*  
 For J. Lundgren & Self. J.A. Orde  
 Engineer Surveyor to Lloyd's Register of Shipping.  
 Committee's Minute...  
 Assigned... *+ LMC 11.49 oil Eng. 2 DB. 100 lb. C.L.*



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