

REPORT ON OIL ENGINE MACHINERY.

No. 105153  
27 MAR 1948

Date of writing Report 18-2-1948. When handed in at Local Office 22 MAR 1948 Port of NEWCASTLE-ON-TYNE  
No. in Survey held at WALLSEND ON TYNE. Date, First Survey 29th OCTOBER 1946 Last Survey 27th FEBRUARY 1948  
Reg. Book. Number of Visits 88

Single on the Main Screw vessel LEMBULUS.  
Built at Wallsend By whom built Swan, Hunter & Wigham Richardson Ltd Yard No. 1755 When built 1948-  
Engines made at Wallsend By whom made Wallsend Shipyard & Eng'g Co. Ltd Engine No. 1001. When made 1948-  
Donkey Boiler made at Wallsend By whom made doth Boiler No. 1001. When made 1948-  
Brake Horse Power 2800. Owners. Anglo Saxon. Port belonging to LONDON  
I.N. Power as per Rule 555. Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes.  
Trade for which vessel is intended Ocean going, Carrying Petroleum in bulk.

IL ENGINES, &c. — Type of Engines 3 Cyls Opposed-piston type 2 stroke cycle 2 Single or double acting Single acting  
Maximum pressure in cylinders 640 lb/sq. in. Diameter of cylinders 600 m.m. Length of stroke 2320. No. of cylinders 3 No. of cranks 3  
Mean Indicated Pressure 91.5 " Ahead Firing Order in Cylinders 1, 3, 2. Span of bearings, adjacent to the crank, measured between each  
from inner edge to inner edge 1200 m.m. Is there a bearing between each crank THREE-THROW  
Flywheel dia. 7'6 3/4" Weight 2263 Moment of inertia of flywheel 450 lbs. in<sup>2</sup> or Kg.cm.<sup>2</sup> 11.65 x 10<sup>6</sup> Means of ignition HEAT OF COMPRESSION Kind of fuel used Heavy oil  
Crank Shaft, Solid forged dia. of journals 450 m.m. Crank pin dia. 450 m.m. SIDE Crank webs SOLID Mid. length breadth 820. CENTRE Thickness parallel to axis 255 m.m.  
Flywheel Shaft, diameter as per Rule 450. Intermediate Shafts, diameter as fitted 17 3/4" Thrust Shaft, diameter at collars as fitted 450 m.m.  
ON CRANK SHAFT. as fitted 450. as per Rule 17 3/4" Is the shaft fitted with a continuous liner YES.  
Tube Shaft, diameter as fitted 17 3/4" Is the (tube) shaft fitted with a continuous liner YES.

Bronze Liners, thickness in way of bushes as per Rule 27/32 Thickness between bushes as fitted 23/32 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 In one piece.  
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 Close fit.  
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.  
Propeller, dia. 15'17 1/2" Pitch 11'36" No. of blades 4. Material Bronze whether moveable No Total developed surface 84 sq. feet  
Moment of inertia of propeller 23.0 x 10<sup>6</sup> lbs. in<sup>2</sup> or Kg.cm.<sup>2</sup> Kind of damper, if fitted NIL.  
Method of reversing Engines Compressed air by 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 m.m. 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 2 in. DISTILLED WATER 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. ONE Diameter 85 m.m. Stroke 608 m.m. Can one be overhauled while the other is at work Yes.  
Pumps connected to the Main Bilge Line No. and size ONE Bilge P. 40 Tons/hr. ONE G.S.P. 100 Tons/hr. ONE Bilge/SANITARY. 25 Tons/hr. How driven Steam LEVER DRIVEN.

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.  
Ballast Pumps, No. and size NIL. Power Driven Lubricating Oil Pumps, including spare pump, No. and size ONE M.E.G. DRIVEN. 25 Tons/hr. ONE STAND-BY. 60 Tons/hr.  
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:—In machinery spaces One 4" & one 4 1/2" In pump room.  
In holds, &c. Independent Power Pump Direct Suctions to the engine room bilges, No. and size one G.S.P. 4 1/2"; one Bilge P. 4 1/2"; one Circ. W.P. 5"

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 Yes Are they fitted with valves or cocks VALVES 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 How are they protected.  
What 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 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 NONE. MACAY. AFT. Is it fitted with a watertight door worked from.

If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork.  
Main Air Compressors, No. No. of stages 3 stroke 608 m.m. driven by STEAM.  
Auxiliary Air Compressors, No. Two No. of stages 3 STAGE stroke 608 m.m. driven by STEAM.  
Small Auxiliary Air Compressors, No. NIL. No. of stages stroke driven by  
What provision is made for first charging the air receivers Steam driven Air Compressors.  
Scavenging Air Pumps, No. ONE DBLE-ACTING. diameter 1700 m.m. stroke 608 m.m. driven by MAIN ENG.  
Auxiliary Engines crank shafts, diameter as per Rule. No. 29 30 kW. one Steam & one Oil Eng. Position Side side in Eng. Rm.  
Have the auxiliary engines been constructed under special survey YES. Is a report sent herewith YES.



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. NIL. Cubic capacity of each. ✓ Internal diameter. ✓ thickness. ✓  
Seamless, welded or riveted longitudinal joint. ✓ Material. ✓ Range of tensile strength. ✓ Working pressure by Rules. ✓  
Starting Air Receivers, No. Two Total cubic capacity. 220 CUB. FT. Internal diameter. 4'3 9/8" thickness. 1 5/32" Actual. ✓  
Seamless, welded or riveted longitudinal joint. RIVETED ✓ Material. M. STL. Range of tensile strength. 29 to 33 TONS. Working pressure by Rules. ✓ Actual. 600 ✓

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. CRANK SHAFT 8<sup>TH</sup> AUG. 46 Receivers. 2-12-46 Separate fuel tanks. ✓  
(If not, state date of approval) LINE SHAFTING 4<sup>TH</sup> NOV. 46

Donkey boilers. 18-4-46 & 19-12-46 General pumping arrangements. ✓ Pumping arrangements in machinery space. 2<sup>ND</sup> MAY 1947

Oil fuel burning arrangements. 13-2-47.

Have Torsional Vibration characteristics been approved. YES. Date of approval. 4<sup>TH</sup> NOVEMBER 1946.

#### SPARE GEAR.

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

State the principal additional spare gear supplied. 1. Main Bearing, 25 Piston Rings, 2 Fuel Valves (Complete),  
2 sets of Fuel pp. pressure parts, valves, Crossheads & Levers etc; 12 each Rubber Pipes for P.W.S. & Transverse  
1 each Roller Chains for Chain Drives; 2 Pyrometers for Eng.; 6 HD Bolts for Bedplate, 1 T.S.O., etc etc.

The foregoing is a correct description, and the particulars of the installation as fitted, are as approved  
FOR THE WALLSEND SLIPWAY & ENGINEERING CO. LIMITED for torsional vibration characteristics.  
Manufacturer.

Dates of Survey while building  
During progress of work in shops - (1946) OCT. 29, NOV. 25, DEC. 2, 4, 10, 17, 27, 30, (1947) JAN. 9, 24, 30, 31, FEB. 5, 13, 19, MAR. 5, 10, 11, 24, APR. 9, MAY. 7, 29, JUNE. 3, 4, 9, 10, 24, JULY. 9, 10, 14, 16, 17, 25, AUG. 5, 20, 21, 25, 26, 27, 28, SEPT. 3, 5, 10, 12, 24, OCT. 1, 2, 3, 13, 21, 22, 28, 31, NOV. 6, 18, 24, 25, 26, 27, 28  
During erection on board vessel - DEC. 2, 8, 9, 10, 11, 16, 17, 19, 22, 23, 29, 30, 31, (1948) JAN. 5, 12, 19, 22, 23, 26, 27, 29, FEB. 2, 3, 6, 20, 21, 27.  
Total No. of visits. 88

Dates of examination of principal parts—Cylinders. 3-10-47 Covers. ✓ Pistons. 5-8-47 Rods. 21-10-47 Connecting rods. 5-8-47

Crank shaft. 16-7-47 Flywheel shaft. as cr. sh. Thrust shaft. as cr. sh. Intermediate shaft. 27-8-47 Tube shaft. ✓

Screw shaft. 27-8-47 Propeller. 21-8-47 Stern tube. 27-8-47 Engine seatings. 27-8-47 Engine holding down bolts. 31-12-47

Completion of fitting sea connections. 24-9-47 Completion of pumping arrangements. 3-2-48 Engines tried under working conditions. at sea 20<sup>th</sup> & 21<sup>st</sup> Feb. 1948

Crank shaft, material. Forged M. STL Identification mark. LLOYDS N° 261 Flywheel shaft, material. Forged M. STL Identification mark. as cr. sh.

Thrust shaft, material. " M. STL Identification mark. as cr. sh. Intermediate shaft, material. " M. STL Identification marks. LLOYDS 16080 HA

Tube shaft, material. ✓ Identification mark. ✓ Screw shaft, material. " M. STL Identification mark. LLOYDS 16080 HA

Identification marks on air receivers. 2 off. LLOYDS TEST 800 LBS W.P. 600 LBS AW. 6-9-47 AW.

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. IN ENG. RM. 8" IN BLR RM. One 2 1/2" HOSE on G.S.P.P. Steam 2" bore perforated pipes, one 2 1/2" " IN BLR RM. to ROXY. C.W. LINE

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo. FOAMITE FIRE EXTINGUISHERS, 3 of 10 GALL. & 5 of 2 GALL. IN ENR. RM. AND 2 of 2 GALL. IN BLR RM. 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. NOT DESIRED

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 and fitted on board under special Survey, in accordance with the approved plans and the Society's Rules, and the materials and workmanship are good.

The Machinery was tried under working conditions with satisfactory results, and is eligible, in my opinion, for record + LMC 2.48., and the notations D.R. 180<sup>th</sup> T.S.O.

The torsional vibrations characteristics data was approved 4-11-47 and a Notice Plate re Revs 80 to 90 r.p.m. has been fitted at the Main Engine CONTROL STATION.

P.S. The WSTE Coy. have re-submitted the Torsional Vibration Calcs. on account of the Weight of Propeller as fitted. See Their Letter of 18-3-48.

The amount of Entry Fee ... £ :  
Special (April 1945 Scale) 130 : 10/-  
FAR P. CONSTR. BED. COILS. ENTHS 14 : 0/-  
Donkey Boiler Fee... £ 28 : 13/-  
2 STARTING AIR RECS 6 : 0/-  
Travelling Expenses (if any) £ :  
When applied for 19  
When received 19

(Committee's Minute) FRI. 30 APR 1948

Assigned + LMC 2.48 Oil Engg.  
C.L. DB 180<sup>th</sup>

A Watt

Engineer Surveyor to Lloyd's Register of Shipping.

Lloyd's Register Foundation