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24 DEC 1943

LIVERPOOL F.E. No. 120372-
No. 66833

REPORT ON OIL ENGINE MACHINERY.

Received at London Office

Date of writing Report *22-3-43* When handed in at Local Office *22-3-43* Port of *Glasgow*
No. in Survey held at *Glasgow* Date, First Survey *29 Dec 1941* Last Survey *16 March 1943*
Reg. Book. Number of Visits *38+58*

Single on the *Twin* Triple Quadruple Screw vessel *EMPIRE MACCOLL.* Tons: Gross *9133* Net *4830*

Built at *Birkenhead* By whom built *Cammell, Laird & Co. Ltd.* Yard No. *1106* When built *1943*
Engines made at *Glasgow* By whom made *Harland & Wolff, Ltd.* Engine No. *A/83MSM. 8459* When made *1943*
Donkey Boilers made at *Birkenhead* By whom made *Cammell Laird & Co. Ltd.* Boiler No. *1106* When made *1943*
Brake Horse Power *3300* Owners *Ministry of War Transport* Port belonging to
Nom. Horse Power as per Rule *490* Is Refrigerating Machinery fitted for cargo purposes *no* Is Electric Light fitted *yes*
Trade for which vessel is intended

OIL ENGINES, &c.—Type of Engines *Heavy oil. Airless injection* 2 or 4 stroke cycle *4* Single or double acting *S.A.*
Maximum pressure in cylinders *700 lb.* Diameter of cylinders *298* *740 mm.* Length of stroke *59 1/16* *1500* No. of cylinders *6* No. of cranks *6*
Mean Indicated Pressure *128*

Span of bearings, adjacent to the Crank, measured from inner edge to inner edge *972 mm.* Is there a bearing between each crank *yes*
Revolutions per minute *110* Flywheel dia. *2489 mm.* Weight *2590 Kgs.* Means of ignition *Compression* Kind of fuel used *Diesel oil.*
Crank Shaft, Solid forged Semi-forged All built dia. of journals *as per Rule* *Appd. 505 mm.* Crank pin dia. *505 mm.* Crank Webs *Mid. length breadth* *980 mm.* Thickness parallel to axis *310 mm.*
 as fitted *505 mm.* BORED *230 mm.* *13.47" 13.48* *310 mm.* *292.5 mm.*

Flywheel Shaft, diameter *as per Rule* *13.47"* Thrust Shaft, diameter at collar *as per Rule* *Appd. 454 mm.*
 as fitted *14.75"* as fitted *454 mm.*

Tube Shaft, diameter *as per Rule* *15.1"* Is the shaft fitted with a continuous liner *yes*
 as fitted *16"* as fitted *16"*

Bronze Liners, thickness in way of bushes *as per Rule* *25/32"* Thickness between bushes *as per Rule* *9/16"* Is the after end of the liner made watertight in the propeller boss *yes*
 as fitted *27/32"* as fitted *1 1/16"*

If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner
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 the tube shaft *NO* Length of Bearing in Stern Bush next to and supporting propeller *5'-2"*

Propeller, dia. *16'-0"* Pitch *11'-6"* No. of blades *4* Material *MN: BR.* whether Moveable *NO.* Total Developed Surface *81* sq. feet
Method of reversing Engines *Direct* Is a governor or other arrangement fitted to prevent racing of the engine *yes* Means of lubrication *frised*

Thickness of cylinder liners *53 mm.* Are the cylinders fitted with safety valves *yes* Are the exhaust pipes and silencers water cooled or lagged with non-conducting material *lagged*
Cooling Water Pumps, No. *1* 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. *2* Diameter *8" x 8" x 10"* Stroke *no* Can one be overhauled while the other is at work

Pumps connected to the Main Bilge Line { No. and Size *2 Bilge Sanitary 8" x 8" x 10" Duplex, 1 Ballast 10" x 11" x 10" Duplex* How driven *Steam*
Is the cooling water led to the bilges *Plumbing Blocks* so, state what special arrangements are *Nothing additional to normal bilge suc.* deal with this water in addition to the ordinary bilge pumping arrangements

Ballast Pumps, No. and size *1 @ 10" x 11" x 10"* Power Driven Lubricating Oil Pumps, including Spare Pump, No. and size *1 Engine driven 100 tons per hour*
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 *3 @ 3 1/2"* In Pump Room *2 @ 4"*

In Holds, & Forehold *1 @ 2 1/2" x 5"* Forehold *1 @ 2" P.S.* Independent Power Pump Direct Suctions to the Engine Room, Bilges, No. and size *1 @ 6" aft well, 1 @ 8" emergency P.S.* INDEPENDENT *10 1/2" x 12 1/2" x 24" SIMPLEX.*
Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes *yes.* Are the Bilge Suctions 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 *Built Boxes* 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 *Below and at L.W.L.*
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
What pipes pass through the deep tanks *none* 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 Is it filled 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. *2* No. of stages *2* Diameters *1 @ 8 7/8"* Stroke *6 1/4"* Driven by *Steam*
Auxiliary Air Compressors, No. *2* No. of stages *2* Diameters *1 @ 4 1/8"* Stroke *6 1/4"* Driven by *Steam*
Small Auxiliary Air Compressors, No. *1* No. of stages *1* Diameters *1 @ 4 1/8"* Stroke *6 1/4"* Driven by *Steam*

What provision is made for first Charging the Air Receivers *Steam driven Compressor.*
Scavenging Air Pumps, No. *1* Diameter *10"* Stroke *6"* Driven by *Steam*
Auxiliary Engines crank shafts, diameter *as per Rule* *10"* No. *1* Position *Vertical*
Have the Auxiliary Engines been constructed under special survey Is a report sent herewith



AIR RECEIVERS: — Have they been made under survey *yes* State No. of Report or Certificate *4034 Lpl*
 Is each receiver, which can be isolated, fitted with a safety valve as per Rule *yes* *previously forwarded*
 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, lap welded or riveted longitudinal joint _____ Material _____ Range of tensile strength _____ Working pressure *by Rules* _____
Starting Air Receivers, No. *2* Total cubic capacity *450 c.f. each* Internal diameter *4'-10 7/8"* thickness *27/32"*
 Seamless, lap welded or riveted longitudinal joint *Riveted* Material *Steel* Range of tensile strength *28/32 Ton* Working pressure *by Rules* *370.0 lb*
 Actual *350. lb*

IS A DONKEY BOILER FITTED? *Yes - Two* 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 *Thrust 23-4-41* Receivers *31/10/40* Separate Fuel Tanks *✓*
 (If not, state date of approval) *1-5-41*
 Donkey Boilers *18-11-41* General Pumping Arrangements *12-7-41* Pumping Arrangements in Machinery Space *27-10-41*
 Oil Fuel Burning Arrangements *2-10-41*

SPARE GEAR.

Has the spare gear required by the Rules been supplied *yes, in accordance with emergency arrangements*
 State the principal additional spare gear supplied *See list attached*

The foregoing is a correct description.

HARLAND AND WOLFF, LIMITED

CAMMELL LAIRD & CO LIMITED

Wm. J. Wright Manufacturer.

W. H. W. W. W.

Dates of Survey while building	During progress of work in shops --	1941 Dec 29 1942 Jan 13 Mar 9 Apr 21 May 1 Jun 18 Jul 8 9 10 11 Aug 14 Sep 7 8 17 Oct 23 28 Nov 5 Dec 3 7 11 15 19
	During erection on board vessel --	Dec 18 24 25 29 30 1943 Jan 4 5 7 12 14 22 29 Feb 15 25 Mar 2 16 Apr 5 7 21 24 May 6 13 18 28 June 3 7 11 15 16 17 29 30 July 5 9 13 15 July 1 8 22 23 25 28 29 Aug 4 18 24 25 26 27 Sept 3 7 10 13 15 22 23 29 Oct 1 5 11 12 15 18 20 21 22 29 Nov 1 9 15 16 25
	Total No. of visits	<i>38 + 58</i>

Dates of Examination of principal parts —	Cylinders <i>26-12-42</i>	Covers <i>26-12-42</i>	Pistons <i>12-1-43</i>	Rods <i>12-1-43</i>	Connecting rods <i>22-1-43</i>
Crank shaft	<i>8-9-42</i>	Flywheel shaft <i>✓</i>	Thrust shaft <i>8-9-42</i>	Intermediate shafts <i>18-8-43</i>	Tube shaft <i>✓</i>
Screw shaft	<i>16-6-43</i>	Propeller <i>15-7-43</i>	Stern tube <i>9-7-43</i>	Engine sealings <i>28-6-43</i>	Engines holding down bolts <i>13-9-43</i>
Completion of fitting sea connections	<i>9-7-43</i>	Completion of pumping arrangements	<i>15-11-43</i>	Engines tried under working conditions	<i>25-11-43</i>
Crank shaft, Material	<i>Steel</i>	Identification Mark	<i>8459/4 P.7</i>	Flywheel shaft, Material	—
Thrust shaft, Material	<i>Steel</i>	Identification Mark	<i>5.3960 P.7</i>	Intermediate shafts, Material	<i>Steel</i>
Tube shaft, Material	—	Identification Mark	—	Screw shaft, Material	<i>Steel</i>
Identification Marks on Air Receivers	<i>4034, R.O.B. 13-7-43</i>				

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 *Chemical*
 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 *yes* If so, state name of vessel *Engine A/78 MSM. Glasgow Rpt No 66106 Cammellands 1105. BRITISH RESTRAINT*

General Remarks (State quality of workmanship, opinions as to class, &c.)
This machinery has been built under Special Survey & in accordance with the Rules of this Society, the approved plans, & the Ministry of War Transport Specification. The materials & workmanship are good. Shop trials have been satisfactorily carried out. The machinery has been despatched to the Yard of Messrs. Cammell, Laird & Co. Ltd; Birkenhead, to be installed on board their Yard No. 1105. It will be eligible in my opinion to be classed in the Register Book with the notation -i-LMC. c. with date when efficiently installed on board the vessel & tried under working conditions. This machinery is fitted in H.M. EMPIRE MACCOLL, tried under working conditions & found eligible for record + LMC 11.43. CL, subject to cracked bedplate in way of thrust being examined by 11.44.

The amount of Entry Fee	£ 5 : -
Special Specification	£ 65 : 13
Donkey Boiler Fee	£ 16 : 8
Travelling Expenses (if any)	£ 32 : 17-0

When applied for **23 MAR 1943**
 When received, **15 DEC 1943**

P. Fitzgerald & A. Sutherland
 Engineers Surveyors to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 23 MAR 1943**
 Assigned *Deferred for completion*

LIVERPOOL 21 DEC 1943
 Lloyd's Register of Shipping
 + LMC 11.43, Subject
 C.L. F.D.
 Oil engines.

Certificate (if required) to be sent to the Registrar of Shipping, Liverpool. (The Surveyors are requested not to write on or below the space for Committee's Minute.)