

REPORT ON STEAM RECIPROCATING ENGINE MACHINERY.

Date of writing Report _____ When handed in at Local Office **3 JAN 1945** Port of **Sunderland**
 No. in Survey held at **Sunderland** Date, First Survey **11 Jan** Last Survey **29 Dec 1944**
 Reg. Book _____ (Number of Visits **78**)
 on the **"EMPIRE MANDALAY"** Tons {Gross **7085**
 Built at **Sunderland** By whom built **Shipbuilding Corp. L^d (New Branch)** Yard No. **5** When built **1944**
 Engines made at **Barrow.** By whom made **Vickers Armstrongs L^d** Engine No. **844** When made _____
 Boilers made at **Sunderland** By whom made **G. Blank (1938) L^d** Boiler No. **1333** When made **1944.**
 Registered Horse Power _____ Owners **Ministry of War Transport** Port belonging to **Sunderland.**
 Nom. Horse Power as per Rule **510** Is Refrigerating Machinery fitted for cargo purposes **No.** Is Electric Light fitted **Yes.**
 Trade for which vessel is intended _____

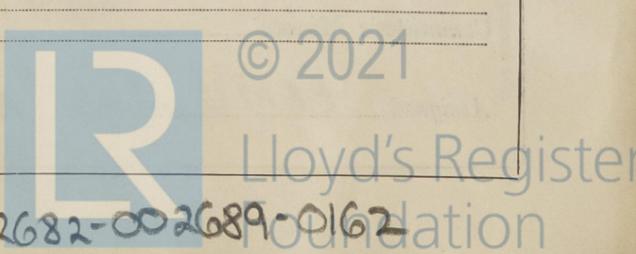
ENGINES, &c.—Description of Engines **(For particulars please see Barrow Rpt. 2961)** Revs. per minute _____
 Dia. of Cylinders _____ Length of Stroke _____ No. of Cylinders _____ No. of Cranks _____
 Crank shaft, dia. of journals _____ Crank pin dia. _____ Crank webs _____ Thickness parallel to axis _____
 as per Rule _____ as fitted _____ Mid. length breadth _____ shrunk _____
 as per Rule _____ as fitted _____ Mid. length thickness _____ Thickness around eye-hole _____
 Intermediate Shafts, diameter _____ Thrust shaft, diameter at collars _____
 as per Rule _____ as fitted _____ as per Rule _____ as fitted _____
 Tube Shafts, diameter _____ Screw Shaft, diameter _____ Is the {tube screw} shaft fitted with a continuous liner {Yes.} ✓
 as per Rule _____ as fitted _____ as per Rule _____ as fitted _____
 Bronze Liners, thickness in way of bushes _____ Thickness between bushes _____ Is the after end of the liner made watertight in the
 as per Rule **13/16** ✓ as fitted _____ as per Rule **2 1/32** ✓ as fitted _____
 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 **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 the tube
 at **No** If so, state type _____ Length of Bearing in Stern Bush next to and supporting propeller **5'-1"** ✓
 Propeller, dia. **18'-0"** ✓ Pitch **16'-6"** No. of Blades **4** ✓ Material **C.I.** ✓ whether Moveable **No.** Total Developed Surface **109** sq. feet
 Feed Pumps worked from the Main Engines, No. _____ Diameter _____ Stroke _____ Can one be overhauled while the other is at work _____
 Bilge Pumps worked from the Main Engines, No. **Two** ✓ Diameter **4"** ✓ Stroke **24"** ✓ Can one be overhauled while the other is at work **Yes.** ✓
 Feed Pumps {No. and size **1 @ 9 1/2" x 4" x 21"** ✓ Pumps connected to the {No. and size **1 @ 4" x 9" x 21"** ✓ & Ballast Pump ✓
 How driven **Steam** Main Bilge Line How driven **Steam**
 Ballast Pumps, No. and size **1 @ 10 1/2" x 13" x 24"** 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:—In Engine and Boiler Room **2 @ 3" & 1 @ 2 1/4" E.R.** ✓ **2 @ 3" in Blue Rm.** ✓ **1 @ 2 1/2" Jammed Well.** ✓
 In Pump Room _____ In Holds, &c. **N°1. 3" φ r.s.** ✓ **N°2. 3" φ r.s.** ✓ **N°3. 3" φ r.s.** ✓
N°4. 3" φ r.s. ✓ **N°5. 3" φ r.s.** ✓
 Main Water Circulating Pump Direct Bilge Suctions, No. and size **1 @ 9"** ✓ Independent Power Pump Direct Suctions to the Engine Room Bilges,
 No. and size **1 @ 5"** ✓ Are all the Bilge Suction Pipes in holds and tunnel well fitted with strum-boxes **Yes.** ✓
 Are the Bilge Suctions in the Machinery Space 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 **Both.** ✓
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates **Yes.** ✓ Are the Overboard Discharges above or below the deep water line **Below.** ✓
 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 **Yes.** ✓ Is it fitted with a watertight door **No (Behind masts)** ✓ worked from _____

MAIN BOILERS, &c.—(Letter for record **S.** ✓) Total Heating Surface of Boilers **7248 sq. ft.** ✓
 Which Boilers are fitted with Forced Draft **All.** ✓ Which Boilers are fitted with Superheaters **All.** ✓
 No. and Description of Boilers **3 P.B. (Spr.)** ✓ Working Pressure **220 lbs.** ✓
 IS A REPORT ON MAIN BOILERS NOW FORWARDED? **Yes.** ✓
 IS A DONKEY BOILER FITTED? **No.** ✓ If so, is a report now forwarded? _____
 Can the donkey boiler be used for domestic purposes only _____

PLANS. Are approved plans forwarded herewith for Shafting _____ Main Boilers _____ Auxiliary Boilers _____ Donkey Boilers _____
 (If not state date of approval)
 Superheaters _____ General Pumping Arrangements _____ Oil fuel Burning Piping Arrangements _____
 SPARE GEAR.
 Has the spare gear required by the Rules been supplied **Yes.** ✓
 State the principal additional spare gear supplied _____

The foregoing is a correct description.
 GEORGE CLARK (1988) LTD.

Archie J. Perry
 DIRECTOR & GENERAL MANAGER



002682-002689-0162

Dates of Survey while building
 During progress of work in shops - - - 1944 Jan 11, 13, 14, 21 Feb 4, 7, 28 March 1, 8, 9, 13, 16, 28, 31 April 3, 4, 12, 13, 21, 22, 25, 27, 28 May 1, 2, 3, 5, 8, 10, 12, 15, 16, 17, 18, 19, 22, 23 June 1, 2, 6, 7, 12, 27 July 11, 12, 13 Aug 2, 18, 21, 25, 28, 29
 During erection on board vessel - - - Sep 19, 26 Oct 2, 11, 20, 23, 26, 30, 31 Nov 1, 2, 5, 7, 10, 13, 14, 15, 16, 20, 21, 28 Dec 1, 4, 15, 19, 28
 Total No. of visits 78

Dates of Examination of principal parts—Cylinders — Slides — Covers —
 Pistons — Piston Rods — Connecting rods —
 Crank shaft — Thrust shaft 19/9/44 Intermediate shafts 29/8/44
 Tube shaft — Screw shaft 2/10/44 Propeller 2/10/44
 Stern tube 20/10/44 Engine and boiler seatings 16/11/44 Engines holding down bolts 16/11/44
 Completion of fitting sea connections 26/10/44
 Completion of pumping arrangements 19/12/44 Boilers fixed 16/11/44 Engines tried under steam 15/12/44
 Main boiler safety valves adjusted 15/12/44 Thickness of adjusting washers P.Bh. P. 7/16 S. 3/8 C.Bh. P. 7/16 S. 3/8 St. Bl. 5/16 S. 3/8
 Crank shaft material Ingot Steel Identification Mark N° 2167, 2168, 2169, 2170, 2171, 2172 Thrust shaft material Ingot Steel Identification Mark N° 2166 W.H.F.
 Intermediate shafts, material Ingot Steel Identification Mark N.H.F. 29/8/44 Tube shaft, material — Identification Mark —
 Screw shaft, material Ingot Steel Identification Mark N° 2165 W.H.F. Steam Pipes, material S.D. Steel Test pressure 660 lbs Date of Test 3/10/44, 16/11/44, 21/11/44, 28/11/44
 Is an installation fitted for burning oil fuel No. Is the flash point of the oil to be used over 150° F. —
 Have the requirements of the Rules for the use of oil as fuel been complied with —
 Is the vessel (not being an oil tanker) fitted for carrying oil as cargo No. 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 Assessed.
 Is this machinery duplicate of a previous case? If so, state name of vessel Empire Indor

General Remarks (State quality of workmanship, opinions as to class, &c.) This machinery, consisting of main Engines by Vickers Armstrongs L^{td} (Barrow Rpt. 2961) & boilers by Messrs G. Clark (1938) L^{td}, has been securely fitted on board the vessel & tried under working conditions alongside Quay with satisfactory results. The requirements of the Society's rules & the Specifications have been fulfilled.

The machinery is eligible in my opinion to have notation
 1/20 L.M.C. 12, 44, T.S. (C.L) 3 S.B. (Spt.) 220 lbs.

Certificate to be sent to SUNDERLAND
 (The Surrogates are requested not to write on or below the space for Committee's Minute.)

The amount of Entry Fee	£ 70 : 6	When applied for, 3 JAN 1945
3/5 Special	£ 60 : 6	
Donkey Boiler Fee	£ 15 : 1	When received,
Travelling Expenses (if any)	£ :	19

J. H. Rasm.
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 16 FEB 1945
 Assigned + LMC 12, 44 FD. C.L. Spt.