

# REPORT ON STEAM RECIPROCATING ENGINE MACHINERY.

Date of writing Report 19... When handed in at Local Office 31<sup>st</sup> Dec 1943 Port of Sunderland  
 No. in Survey held at Sunderland Date, First Survey 4 May 1942 Last Survey 30 Dec 1943  
 Reg. Book "EMPIRE TRAIL" (Number of Visits 64)  
 on the "EMPIRE TRAIL" Tons {Gross 7083  
 Built at Sunderland By whom built Shipbuilding Corporation L<sup>td</sup> (Wear Bank) Yard No. 1 When built 1943  
 Engines made at Sunderland By whom made G. Clark (1938) L<sup>td</sup> Engine No. 1302 When made 1943  
 Boilers made at Sunderland By whom made G. Clark (1938) L<sup>td</sup> Boiler No. 1302 When made 1943  
 Registered Horse Power 509 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 Triple Expansion Revs. per minute  
 Dia. of Cylinders 24 1/2" - 39" - 40" Length of Stroke 48" No. of Cylinders 3 No. of Cranks 3  
 Crank shaft, dia. of journals as per Rule 13.99" as fitted 14 1/4" Crank pin dia. 14 3/4" Mid. length breadth 22" Thickness parallel to axis 9"  
 as fitted 14 1/4" Crank webs 9" shrunk Thickness around eye-hole 6 3/8"  
 Intermediate Shafts, diameter as per Rule 13.33" as fitted 13 5/8" Thrust shaft, diameter at collars as per Rule 13.99" as fitted 14 1/4"  
 Tube Shafts, diameter as per Rule 14.84" as fitted 15 1/4" Is the {tube screw} shaft fitted with a continuous liner {yes.}  
 Screw Shaft, diameter as per Rule 15 1/4" as fitted 15 1/4"  
 Bronze Liners, thickness in way of bushes as per Rule 13/16" as fitted 13/16" Thickness between bushes as per Rule 2/32" as fitted 2/32" 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 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 no.  
 at no. If so, state type - Length of Bearing in Stern Bush next to and supporting propeller 5" - 1"  
 Propeller, dia. 14" - 10 1/2" Pitch 15" - 3" No. of Blades 4 Material C.I. whether Moveable no. Total Developed Surface 114 3/4 sq. feet  
 Feed Pumps worked from the Main Engines, No. - Diameter - Stroke - Can one be overhauled while the other is at work yes.  
 Bilge Pumps worked from the Main Engines, No. 2 Diameter 4" Stroke 2 1/2" Can one be overhauled while the other is at work yes.  
 Feed Pumps {No. and size 2 @ 4" x 9 1/2" x 21" Pumps connected to the Main Bilge Line {No. and size 1 @ 9 1/2" x 4" x 21" Ballast Pump.  
 How driven Steam 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" - 4" - E.R. 2 @ 3" - B.H. Rm. Tunnel well 2 1/2"  
 In Pump Room N<sup>o</sup>. 5. 3" φ r.s. N<sup>o</sup>. 6. 3" φ r.s. In Holds, &c. N<sup>o</sup>. 1. 3" φ r.s. N<sup>o</sup>. 2. 3" φ r.s. N<sup>o</sup>. 3. 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 @ 3"  
 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 plate 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 for hold bilge Suctions How are they protected hard Casings  
 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 yes. Is it fitted with a watertight door no. (Sikhd) intact worked from -

MAIN BOILERS, &c.—(Letter for record yes.) Total Heating Surface of Boilers 4248 sq ft  
 Which Boilers are fitted with Forced Draft yes. Which Boilers are fitted with Superheaters all  
 No. and Description of Boilers 3 S.B. (Spt.) Working Pressure 220 lbs/sq in  
 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 (1938) LTD  
 Manufacturers.  
 Agents: J. J. Bay  
 DIRECTOR & GENERAL MANAGER



NOTE.—The words which do not apply should be deleted. In a Report also sent on the Half of the Ship? If not, state whether, and when, one will be sent.

Dates of Survey while building

During progress of work in shops - - { 1942. May 4. June 2, 23, 24 Aug 17 Dec 15, 1943. Apr 2, 12, 28, 29. May 3, 11, 21, 26, 31  
June 1, 3, 4, 7, 11, 15, 16, 17, 21, 22, 29, 30. July 1, 5, 8, 14, 28, 31. Aug 3, 6, 11, 12, 16, 18, 20, 23, 25, 26, 31.

During erection on board vessel - - - { Sep. 1, 2, 6, 8, 13, 14, 15, 16, 17, 20, 23, 24, 27, 29, 30. Oct 6, 25. Dec 15, 20, 30

Total No. of visits 52 64

Dates of Examination of principal parts - Cylinders 23/6/42, 24/6/42. Slides 17/8/42 Covers 4/5/42.

Pistons 17/8/42 Piston Rods 17/8/42 Connecting rods 20/8/42.

Crank shaft 2/6/42. Thrust shaft 14/6/43. Intermediate shafts 25/8/43.

Tube shaft - Screw shaft 15/6/43. Propeller 15/6/43.

Stern tube 12/8/43 & 26/8/43 Engine and boiler seatings 24/9/43. Engines holding down bolts 24/9/43.

Completion of fitting sea connections 18/8/43.

Completion of pumping arrangements 15/12/43. Boilers fixed 24/9/43. Engines tried under steam 25/10/43 & 20/12/43.

Main boiler safety valves adjusted 25/10/43. Thickness of adjusting washers P.C. Bl. 5. 3/8 5/16 C. Bl. 5. 3/8 5/16 S. Bl. 5. 3/8 5/16

Crank shaft material Ingot Steel Identification Mark N° 5595 WHF 2/6/42. Thrust shaft material Ingot Steel Identification Mark N° 7956 WHF 14/6/43

Intermediate shafts, material Ingot Steel Identification Marks N° 5491, 4996, 8009, 8008, 8000 Tube shaft, material - Identification Mark -

Screw shaft, material Ingot Steel Identification Mark N° 4958 WHF 25/8/43. Steam Pipes, material S.D. Steel Test pressure 660 lbs/sq. in. Date of Test 17/9/43, 24/9/43, 6/10/43.

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 desired.

Is this machinery duplicate of a previous case.....If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c. This machinery (which was originally designated Contract N° 1265) has been built under Special Survey in accordance with the approved plans, specification & the rules of the Society.

The materials & workmanship are good.  
It has been securely fitted on board the vessel & tried under working conditions alongside quay with satisfactory results & is now eligible in my opinion to have notation  
0 1/2 L.M.C. 12.43, T.P. (CL), 3 S.B (sp) F.D. 220 lbs/sq. in.

SUNDERLAND

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

The amount of Entry Fee	£ 6	:	:	When applied for,
Special Specification	£ 100	9	:	30 DEC 1943
Donkey Boiler Fee	£ 25	2	:	
Travelling Expenses (if any)	£	:	:	When received,
				19

*W. H. Hasler*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUES. 18 JAN 1944

Assigned + LMC 12.43  
F.D.C.L.