

## 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 Ltd (New Bank) Ltd Yard No. 1 When built 1943  
 Engines made at Sunderland By whom made G. Clark (1938) Ltd Engine No. 1302 When made 1943  
 Boilers made at Sunderland By whom made G. Clark (1938) Ltd 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" 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" Thrust shaft, diameter at collars as per Rule 13.99"  
 as fitted 13 5/8" as fitted 14 1/4"  
 Tube Shafts, diameter as per Rule 14.84" Screw Shaft, diameter as per Rule 15 1/4" Is the { tube } shaft fitted with a continuous liner { yes }  
 as fitted 15 1/4" as fitted 15 1/4"  
 Bronze Liners, thickness in way of bushes as per Rule 13/6" Thickness between bushes as per Rule 2/32" Is the after end of the liner made watertight in the  
 as fitted 13/6" as fitted 2/32" 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 no  
 If two liners are fitted, is the shaft lapped or protected between the liners no Is an approved Oil Gland or other appliance fitted at the after end of the tube  
 at no If so, state type no 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. 2 Diameter 4" Stroke 2 1/2" 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 { No. and size 2 @ 4" x 9 1/2" x 21" Pumps connected to the { No. and size 1 @ 9 1/2" x 4" x 21" Ballast Pump.  
 Pumps { 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 no 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.R. Tunnel well 2 1/2"  
 In Pump Room N° 1. 3" p.r.s. N° 2. 3" p.r.s. N° 3. 3" p.r.s. In Holds, &c. N° 1. 3" p.r.s. N° 2. 3" p.r.s. N° 3. 3" p.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 suction How are they protected hard casing  
 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 (Sikad) worked from —

MAIN BOILERS, &c.—(Letter for record yes) Total Heating Surface of Boilers 7248 sq  
 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  
 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

Ants. J. B. Bay  
 DIRECTOR & GENERAL MANAGER

Manufacturer.



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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 58 64

Dates of Examination of principal parts - Cylinders 23/6/42, 24/6/42. Slides 14/8/42 Covers 4/5/42.  
Pistons 14/8/42 Piston Rods 14/8/42 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.Bh. 11/32 Sph. 5/16 C.Bh. 5/16 Sph. 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° 54991, 4996, 8009, 8008, 8000 25/8/43. 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 lb/sq. in. Date of Test 14/9/43  
Is an installation fitted for burning oil fuel No Is the flash point of the oil to be used over 150° F. - 24/9/43  
Have the requirements of the Rules for the use of oil as fuel been complied with - 6/10/43.  
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  
It is now eligible in my opinion to have notation

0 1/2 L.M.C. 12.43, T.P. (CL), 3 S.B. (spt) F.D. 220 lb/sq. in.

Certificate to be sent to SUNDERLAND.

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

Committee's Minute ... TUES. 18 JAN 1944

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

W. T. Fraser.  
Engineer Surveyor to Lloyd's Register of Shipping.



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