

REPORT ON STEAM RECIPROCATING ENGINE MACHINERY.

Received at London Office

Date of writing Report 12/8/41 When handed in at Local Office 12/8/41 Port of *W. Hartlepool*
 No. in Survey held at *Hartlepool/Haverdon Hill* Date, First Survey 10th June, 1940 Last Survey 8th August 1941
 Reg. Book. *91049* on the *S/S "EMPIRE AMETHYST"* (Number of Visits 102) Tons { Gross 8032.20 Net 4675.62
 Built at *Haverdon Hill* By whom built *Jarvis Shipbuilding Co. Ltd.* Yard No. 330 When built 1941
 Engines made at *Hartlepool* By whom made *Richardson Westgarth Co.* Engine No. 2704 When made 1941
 Boilers made at *"* By whom made *"* Boiler No. 2704 When made 1941
 Registered Horse Power Owners *Ministry of War Transport* Port belonging to *Middlesbrough*
 Nom. Horse Power as per Rule 674 Is Refrigerating Machinery fitted for cargo purposes *No.* Is Electric Light fitted *Yes*
 Trade for which Vessel is intended *Oil Tanker*

ENGINES, &c.—Description of Engines *Triple Expansion Vertical Surface Condensing* Revs. per minute 85.5
 Dia. of Cylinders 27" x 44" x 76" Length of Stroke 51" No. of Cylinders 3 No. of Cranks 3
 Crank shaft, dia. of journals as per Rule 15.214" Crank pin dia. 16" Crank webs Mid. length breadth 9.58", 10.8" Thickness parallel to axis 8.4" as fitted 15.5" Mid. length thickness shrunk Thickness around eye-hole 8.4"
 Intermediate Shafts, diameter as per Rule 14.46" Thrust shaft, diameter at collars as per Rule 15.214" as fitted 14 3/4" as fitted 15 3/4", 15.5"
 Tube Shafts, diameter as per Rule 16.01" Screw Shaft, diameter as per Rule 16 1/4" Is the *tube* shaft fitted with a continuous liner { *Yes* }
 Bronze Liners, thickness in way of bushes as per Rule .79" Thickness between bushes as per Rule .59" Is the after end of the liner made watertight in the propeller boss *Yes* as fitted 13 1/16" as fitted 13 1/16" If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner *Yes*
 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 *Yes*
 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 the tub shaft *No* Length of Bearing in Stern Bush next to and supporting propeller 5'-5"
 Propeller, dia. 18'-3" Pitch *Varying* No. of Blades 4 Material *Brnze* whether Moveable *No* Total Developed Surface 131.75 sq. feet
 Feed Pumps worked from the Main Engines, No. 2 Diameter 5" Stroke 27" Can one be overhauled while the other is at work *Yes*
 Bilge Pumps worked from the Main Engines, No. 2 Diameter 5" Stroke 27" Can one be overhauled while the other is at work *Yes*
 Feed Pumps { No. and size 2-12"x9"x24" 1-9"x6"x10" Pumps connected to the { No. and size 2-5"x27" 5" connection Bilge Pump How driven *Steam* Main Bilge Line How driven *Main Engine* *Steam*
 Ballast Pumps, No. and size 1-10"x12"x12" Lubricating Oil Pumps, including Spare Pump, No. and size *5*
 Are two independent means arranged for circulating water through the Oil Cooler *Yes* Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps;—In Engine and Boiler Room 3 1/2" aft well, 3 1/2" ER, 3 1/2" ERS, 2 1/2" Cyl. den, 3 1/2" BR, 3 1/2" BRs
 In Pump Room *FORD 1-2" Main P.R. (rod) 1-3" P.R. 1-3" (S) Ford 6" 1-2" P, 1-2" (S) Deep Tanks 1-2" (H) 1-2" (S) Chain Locker 1-2" (P) 1-2" (S) Main P.R. (rod) 1-3" P, 1-3" (S)*
 Main Water Circulating Pump Direct Bilge Suctions, No. and size 1-5" 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* mud box, valve steel pipe
 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 *none* How are they protected *Yes*
 What pipes pass through the deep tanks *Yes* 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 *none* Is it fitted with a watertight door *Yes* worked from *Yes*

MAIN BOILERS, &c.—(Letter for record *S*) Total Heating Surface of Boilers 10020 sq. ft.
 Which Boilers are fitted with Forced Draft *all* Which Boilers are fitted with Superheaters *all*
 No. and Description of Boilers 3 S.E. Multitubular Working Pressure 220 LB/SQ. IN.
 IS A REPORT ON MAIN BOILERS NOW FORWARDED? *Yes*
 IS A DONKEY BOILER FITTED? *No* If so, is a report now forwarded? *Yes*
 Can the donkey boiler be used for domestic purposes only *Yes*

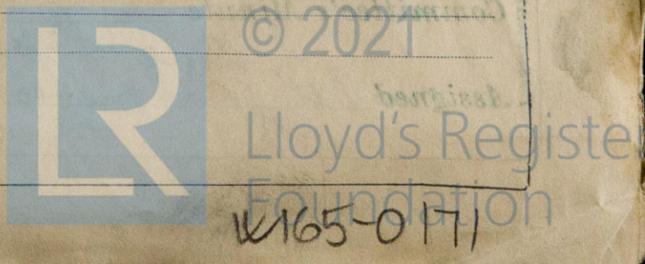
PLANS. Are approved plans forwarded herewith for Shafting 2/1/40 Main Boilers 16/10/39 Auxiliary Boilers *Yes* Donkey Boilers *Yes*
 (If not state date of approval) 30/10/39
 Superheaters *Yes* General Pumping Arrangements 12/3/40 Oil fuel Burning Piping Arrangements 8/10/40
SPARE GEAR.

Has the spare gear required by the Rules been supplied *Yes*
 State the principal additional spare gear supplied *Yes*

Tons.	140
	78
	664

8.14.17.21.22.
 1. April. 4.
 July 2.4.7.8.
 Visits 81.

The foregoing is a correct description.
 For RICHARDSON, WESTGARTH & Co. LIMITED,
W. J. D. Dorrance Manufacturer.
 DIRECTOR



1940. June 10. Aug. 29-30. Oct. 18-23-29. Nov. 1-14-15-29-30. Dec. 2-4-9-12-13-16-17-19-24-26-27.

Dates of Survey while building
 During progress of work in shops - - -
 During erection on board vessel - - -
 Total No. of visits

1941. Jan. 3-6-7-9-14-21-29. Feb. 4-6-11-12-13-14-17-21-24-26-27-28. March 10-11-13-18-19-25. April 1-10-16-15-21-22-24-28-30. May 1-7-8-13-15-16-23-24-26-29. June 6-9-11-12-13-17-18-19-20-23-27-30. July 1-3-4-7-9-11-14-15-16-17-18-21-22-25-28-31. Aug. 1-2-5-6-7-8.

Middlesbrough 1941 July 4-17. Aug 18-28-30. Sept. 5. Total - 6

Dates of Examination of principal parts—Cylinders 29/11/40 14/12/40 4/2/41 Slides 11/2/41 Covers 14/2/41
 Pistons 14/2/41 Piston Rods 14/2/41 11/3/41 Connecting rods 7/2/41
 Crank shaft 9/1/41 Thrust shaft 4/12/40 Intermediate shafts 4/7/41
 Tube shaft ✓ Screw shaft 1/7/41 Propeller 4/7/41
 Stern tube 30/6/41 Engine and boiler seatings 26/6/41 Engines holding down bolts 11/8/41
 Completion of fitting sea connections 4/7/41 Boilers fixed 4/8/41 Engines tried under steam 14/30/41
 Completion of pumping arrangements 14/8/41 Thickness of adjusting washers PORT 13/32 STAR 19/64 P 13/32 S 3/8 F 2 3/4
 Main boiler safety valves adjusted 14/8/41 Crank shaft material Steel Identification Mark 9265 HAI Thrust shaft material Steel Identification Mark 3909 AEG.
 Intermediate shafts, material steel Identification Marks 9265 HAI Tube shaft, material ✓ Identification Mark
 Screw shaft, material steel Identification Mark 9264 HAI Steam Pipes, material S.P. Steel Test pressure 660 lb. Date of Test 9/8/41
 Is an installation fitted for burning oil fuel Yes Is the flash point of the oil to be used over 150°F. Yes
 Have the requirements of the Rules for the use of oil as fuel been complied with Yes
 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 required
 Is this machinery duplicate of a previous case Yes If so, state name of vessel RW 2703 EMPIRE SAPPHIRE

General Remarks (State quality of workmanship, opinions as to class, &c.)
 The engines & boilers of this vessel have been constructed under Special Survey & in accordance with the approved plans.
 The workmanship & materials have been found good.
 The machinery has been forwarded to Haverstr Hill to be fitted on board by Messrs. Fowers Shipbuilding Co. in their Yard No 330.
 In my opinion, this vessel will be eligible to have record of +LMC - with date - on completion.
 The machinery fitted on board, in accordance with the approved plans & Rule Requirements, tried under steam, & found working satisfactorily & in our opinion is eligible for record of +LMC 8, 41 & notation of TS (CL) 8, 41, Forced Draught, & Super-heater.
 The ships side inlet & discharge valves re-improved in accordance with Admiralty Notice M/S 2385/40 and M/S. 3199/40.

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

The amount of Entry Fee ... £ 6 : 0 :
 Special 4/5 LMC ... £ 86 : 19 :
 Donkey Boiler Fee ... £ 21 : 15 :
 Travelling Expenses (if any) £ : :

Clive Bell R. J. Foster
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 23 SEP 1941
 Assigned Litt. for oil fuel &c
 J.D., Cd.

