

# REPORT ON STEAM RECIPROCATING ENGINE MACHINERY.

*Received at London Office*

Date of writing Report 12/8/1941 When handed in at Local Office 12/8/1941 Port of W. Hartlepool

No. in Survey held at Hartlepool Haverdon Hill Date, First Survey 10<sup>th</sup> June, 1940. Last Survey 8<sup>th</sup> August 1941.  
Reg. Book.

9104 on the S/S "EMPIRE AMETHYST" (Number of Visits 102)

Built at Haverdon Hill By whom built Furness Shipbuilding Co. Ltd. Yard No. 330 Tons { Gross 8032.20  
Net 4675.62

Engines made at Hartlepool By whom made Richardson Westgarth & Co. Engine No. 2404 When built 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 95 1/8" 10 1/8"*  
*as fitted 15 1/2"* **Thrust shaft, diameter at collars** *as per Rule 15.214"*  
*as fitted 14 3/4"* **Tube Shafts, diameter** *as per Rule 16.01"* **Screw Shaft, diameter** *as fitted 16 1/4"* **Is the { tube } shaft fitted with a continuous liner {** *yes*  
*as fitted 14 3/4"* **Bronze Liners, thickness in way of bushes** *as per Rule 13 1/16"* **Thickness between bushes** *as per Rule 13 1/16"* **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** *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** *Brass* **whether Moveable** *No* **Total Developed Surface** *131.75* sq. feet  
**Feed Pumps worked from the Main Engines, No.** *2* **Diameter** *5"* **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** *5"* **Stroke** *2 1/2"* **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"x24"* **5" connection Ballast 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** *yes*  
**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" E.R./P. 3 1/2" E.R.S. 2 1/2" Cyl. den, 3 1/2" B.R./P. 3 1/2" B.R.S*  
**In Pump Room** *FORD 1-2" Main P.R. (ind) 1-3" P.R. 1-3" (S) Ford 60/11-2 1/2" (P), 1-2 1/2" (S) Deep Tank*  
*1-2 1/2" (P), 1-2 1/2" (S) Chain Locker 1-2 1/2" (P), 1-2 1/2" (S) Main P.R. room (Aft) 1-3" (P), 1-3" (S)*  
**Main Water Circulating Pump Direct Bilge Suctions, No. and size** *1-10" P* **Independent Power Pump Direct Suctions to the Engine Room Bilges,**  
**No. and size** *1-5" S* **Are all the Bilge Suction Pipes in holds and tunnel well fitted with strum-boxes** *mud box, valve & tail 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 5) Total Heating Surface of Boilers 10020 \$  
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/IN<sup>2</sup>  
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 <sup>2/1/40</sup> <sub>30/10/39</sub> Main Boilers <sup>16/10/39</sup> Auxiliary Boilers ☒ Donkey Boilers ☒  
(If not state date of approval)

Superheaters ☒ General Pumping Arrangements <sup>12/3/40</sup> Oil fuel Burning Piping Arrangements <sup>8/10/40</sup>

SPARE GEAR.

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

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, WESTERH & Co. LIMITED.

*Manufacturer.*

**DIRECTOR**

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4165-0171

W165-017



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.

During progress of work in shops - - -

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. 8. 9. 11. 14. 15. 16. 17. 18. 21. 22. 25. 28. 31. Aug. 1. 2. 5. 6. 7. 8.

Dates of Survey while building

During erection on board vessel - - -

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

Total No. of visits 102

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 1/2 64

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 Steel Identification Mark

Screw shaft, material Steel Identification Mark 9264 HAI Steam Pipes, material S.D. 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 Tanker If so, have the requirements of the Rules been complied with Yes

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 2403 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 Harbort Hall to be fitted or brand by Messrs. Fowles Shipbuilding Co. to 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-inforced in accordance with Admiralty Notice M/52385/40 and M/53199/40.

The amount of Entry Fee ... £ 6 : 0 : When applied for,

Special 4/1 MC ... £ 86 : 19 : 19

Donkey Boiler Fee ... £ 21 : 15 : When received,

Travelling Expenses (if any) £ : : 19

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

Committee's Minute TUE. 23 SEP 1941

+ Lmb. P. 41  
Assigned Litt. for oil fuel or  
22, Cd.



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