

# REPORT ON STEAM RECIPROCATING ENGINE MACHINERY.

Received at London Office JUN 18 1937  
NEWCASTLE-ON-TYNE

Date of writing Report 19 When handed in at Local Office 17/6/37 Port of Newcastle-on-Tyne  
 No. in Survey held at Newcastle on Tyne Date, First Survey 26 Nov 136 Last Survey 15 June 1937  
 Reg. Book. on the S/S BIDDLESTONE (Number of Visits 25)  
 Built at Sunderland By whom built Messrs Short Bros Yard No. 450 When built 1937  
 Recip Engines made at Newcastle on Tyne (Hebburn) By whom made White's Mar. Engrs. Co. Ld Engine No. 11.C. When made 1937  
 LP Turbine " " ditto 1st Pelers " " Hawthorn, Leslie & Co. Ld Turbine No 9934.  
 Boilers made at Middlesbrough By whom made STOCKTON CHEMICAL ENGINEERING & RILEY BOILER CO. LD Boiler No. 6245-6. When made 1937  
 Registered Horse Power Owners Port belonging to 6247 AUYX.  
 Nom. Horse Power as per Rule 348 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted  
 Trade for which Vessel is intended Ocean going.

ENGINES, &c.—Description of Engines Comp. 4 Cyls. S.R. Geared and L.P. Turbine D.R. Geared to Screw Shaft. Revs. per minute 304  
 Dia. of Cylinders 2 of 10 1/2 + 2 of 20 1/4 Length of Stroke 13" No. of Cylinders 4. No. of Cranks 4. Prop. 64  
 Crank shaft, dia. of journals as per Rule 4.79" as fitted 7 3/4" Crank pin dia. 7 3/4" Mid. length breadth 9 3/4" Thickness parallel to axis  
 Crank webs Mid. length thickness 4 1/8" shrunk Thickness around eye-hole  
 Intermediate Shafts, diameter as per Rule 11.40" as fitted 11 7/8" Thrust shaft, diameter at collars as per Rule 11.97" as fitted 12 1/2"  
 Tube Shafts, diameter as per Rule 12.87" as fitted 13 3/8" Screw Shaft, diameter as per Rule 12.87" as fitted 13 3/8" Is the shaft fitted with a continuous liner Yes.  
 Bronze Liners, thickness in way of bushes as per Rule 22.25" as fitted 22 3/32" Thickness between bushes as per Rule 16 1/32" as fitted 16 1/32" Is the after end of the liner made watertight in the propeller boss If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner in one piece.  
 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 tight fit.  
 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 shaft If so, state type Length of Bearing in Stern Bush next to and supporting propeller  
 Propeller, dia. 17 7/8" Pitch No. of Blades Material whether Moveable Total Developed Surface sq. feet  
 Feed Pumps worked from the Main Engines, No. None Diameter Stroke Can one be overhauled while the other is at work  
 Bilge Pumps worked from the Main Engines, No. None Diameter Stroke Can one be overhauled while the other is at work  
 Feed Pumps No. and size one 6" x 8 1/2" x 13" Stroke Pumps connected to the Main Bilge Line No. and size How driven one Rotary, Steam  
 Ballast Pumps, No. and size Lubricating Oil Pumps, including Spare Pump, No. and size one 6" x 5 1/2" x 15" Stroke & one Rotary.  
 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 In Pump Room In Holds, &c.

Main Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room Bilges,  
 No. and size Are all the Bilge Suction Pipes in holds and tunnel well fitted with strum-boxes.  
 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.  
 Are all Sea Connections fitted direct on the skin of the ship. Are they fitted with Valves or Cocks.  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates. Are the Overboard Discharges above or below the deep water line.  
 Are they each fitted with a Discharge Valve always accessible on the plating of the vessel. Are the Blow Off Cocks fitted with a spigot and brass covering plate.  
 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.  
 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. Is the Shaft Tunnel watertight. Is it fitted with a watertight door worked from

MAIN BOILERS, &c.—(Letter for record) Total Heating Surface of Boilers 4886 sq. ft. (1/2 of 2 MAIN, 3400 sq. ft. of AUXY. 1486 sq. ft.)  
 Is Forced Draft fitted FD. on 2 MAIN BLRS No. and Description of Boilers 2 MAIN & 1 AUXY. Working Pressure 240 lbs/sq  
 IS A REPORT ON MAIN BOILERS NOW FORWARDED? See Mdd. Rpts. No. 1.  
 IS A DONKEY BOILER FITTED? If so, is a report now forwarded?  
 Is the donkey boiler intended to be used for domestic purposes only.  
 PLANS. Are approved plans forwarded herewith for Shafting 27/10/36 Main Boilers Auxiliary Boilers Donkey Boilers  
 (If not state date of approval) and 22/1/37  
 Superheaters General Pumping Arrangements Oil fuel Burning Piping Arrangements

### SPARE GEAR.

Has the spare gear required by the Rules been supplied Yes very.  
 State the principal additional spare gear supplied  
 2 Top end bolts + nuts  
 2 Bottom end bolts + nuts  
 2 main Bearing bolts + nuts  
 12 Piston Junk ring studs + nuts  
 20 Condenser tubes + 50 ferrules  
 1 set of valves for water ends of auxy. pumps.  
 1 HP + 1 LP Escape Valve Springs  
 Quantity of assorted Bolts, Studs + Nuts  
 + iron of various sizes.  
 6 HP Piston Rings, 2 LP Piston Rings  
 6 Shaft coupling bolts, 1 Spare Screw Shaft  
 and one Cast Iron Propeller.

The foregoing is a correct description,  
For White's Marine Engineering Co. Ltd.

Manufacturer.

1936 1937  
 During progress of work in shops -- Nov. 26 Jan. 4. 20. 27. 29. Feb. 4. 10. 15. Mar. 10. 12. 15. 25. Apr. 7. 15. 21.  
 May 4. 11. 25. 26. 28. June 1. 4. 7. 11. 15.  
 Dates of Survey while building During erection on board vessel --  
 Total No. of visits 25.

Dates of Examination of principal parts—Cylinders 27/4/37 29/11/37 14/2/37 12/2/37 Slides 4/5/37 Covers As for Cylinders.  
 Pistons 4/5/37 Piston Rods 7/4/37 Connecting rods 7/4/37  
 Crank shaft 25/2/37 (Bedded in main Brgs.) Thrust shaft ✓ Intermediate shafts ✓  
 Tube shaft ✓ Screw shaft ✓ Propeller ✓  
 Stern tube 4/5/37 (3000/100 hyd. test.) Engine and boiler seatings ✓ Engines holding down bolts ✓  
 Completion of fitting sea connections ✓  
 Completion of pumping arrangements ✓ Boilers fixed ✓ Engines tried under steam on test-bed 27/5/37  
 Main boiler safety valves adjusted ✓ Thickness of adjusting washers ✓  
 Crank shaft material Forged Steel Identification Mark LLOYDS 2499 + 2500 28.5/2/37 Thrust shaft material ✓ Identification Mark ✓  
 Intermediate shafts, material ✓ Identification Marks ✓ Tube shaft, material ✓ Identification Mark ✓  
 Screw shaft, material ✓ Identification Mark ✓ Steam Pipes, material ✓ Test pressure ✓ Date of Test ✓  
 Is an installation fitted for burning oil fuel ✓ 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 ✓ 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 ✓  
 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 Reciprocating Engine has been constructed under special survey in accordance with the Rules and approved plans. The materials and workmanship are good. The Engine has been sent to Sunderland to be installed on S/S BIDDLESTONE, Messrs Short Bros' Yard No 450.

The installation is eligible, when completed, for record + LMC with date.  
 NHP of Installation } Basis: - Recip Eng 1HP = 930 x .90 = 837 SHP ; 2 Main Blrs = 3400 sq ft HS.  
 = 348 } L.P. Turbine (Rating as given) = 640 SHP ; F Draft  
 NHP =  $\frac{240 + 590}{1500} \left( \frac{1477}{6} + \frac{3400}{12} + \frac{1486}{15} \right)$  ; 1 Auxy Blr = 1486 sq ft HS.  
 =  $\frac{830}{1500} (246.16 + 283.33 + 99.07) = 347.8$  (say 348 NHP)

LMC FEE for above = 1st 250 NHP x 5/- = 1250/-  
 Remj. 98 " x 3/- = 294/- = 1544/- = £ 77-4-0

X Allotment of Fees.  
 Recip Eng £ 9-5-0  
 L.P. Turb. £ 10-12-0  
 DR/SR Gear £ 9-0-0 + Exps 7/-.  
 2 main Blrs £ 23-0-0 } as charges  
 Auxy Blr £ 9-18-0 } by M&S Surveyors.  
 Installing Mchry £ 15-9-0  
 TOTAL £ 77-4-0  
 1st Entry Fee 5-0-0

The amount of Entry Fee ... £ 5 : 0 :  
 Special LMC as above £ 77 : 4 :  
 Donkey Boiler Fee ... £ : :  
 Travelling Expenses (if any) £ : 7/ :  
 £ 49.13.0  
 When applied for,  
 17 JUN 1937 @ NWC  
 When received,  
 £ 24.17.11 pd 31.7.37  
 £ 15.91.11 pd 31.7.37  
 £ 9.71.11 pd 31.7.37

A Watt  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE 20 JUL 1937  
 Assigned See Sld 22319

