

REPORT ON STEAM TURBINE MACHINERY. No. 102811

APR 1945
pt. 4a.
D.O.

Received at London Office
APR 1945

Date of writing Report 18. 4. 45 When handed in at Local Office 18. 4. 45 Port of NEWCASTLE-ON-TYNE
Date, First Survey 1st May 1944 Last Survey 9th April 1945

No. in Survey held at Newcastle on Tyne Reg. Book. on the S/S "EMPIRE MARS" Tons Gross 8196.71 Net

Built at Sunderland By whom built Sir James Laing & Co. Ltd. Yard No. 755 When built 1945-H

Engines made at Manchester By whom made Metro-Vickers Elec. Co. Ltd. Engine No. 4393 When made 1945
Boilers made at Thur. (Wallsend) By whom made N.E. Marine Eng. Co. (1938) Ltd. Boiler No. 3076 When made 1945

Shaft Horse Power at Full Power 6,800 Owners Min. of War Transport Port belonging to
Nom. Horse Power as per Rule 1236 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

Trade for which Vessel is intended Ocean going, Carrying Petroleum in bulk
TEAM TURBINE ENGINES, &c. - Description of Engines HP & LP Turbines, D/R Geared to one Screw Shaft

No. of Turbines Ahead 2 Direct coupled, single reduction geared to One propelling shaft No. of primary pinions to each set of reduction gearing 2
Astern 1 double reduction geared

direct coupled to Alternating Current Generator phase periods per second rated Kilowatts Volts at revolutions per minute;
for supplying power for driving Propelling Motors, Type Direct Current Generator

rated Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

TURBINE BLADING.	H. P.			I. P.			L. P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION												
2ND												
3RD												
4TH												
5TH												
6TH												
7TH												
8TH												
9TH												
10TH												
11TH												
12TH												

See Report by British Corpn Register

Shaft Horse Power at each turbine H.P. 3350 I.P. - L.P. 3450
Revolutions per minute, at full power, of each Turbine Shaft H.P. 3969 1st reduction wheel 731 I.P. - L.P. 2863 main shaft 116

Rotor Shaft diameter at journals H.P. 5" I.P. - L.P. 7" Pitch Circle Diameter 1st pinion 1st reduction wheel Width of Face 1st reduction wheel 2nd pinion main wheel main wheel

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 1st reduction wheel 2nd pinion main wheel

Flexible Pinion Shafts, diameter at bearings 1st 11" 2nd 17 1/2" Pinion Shafts, diameter at bearings External 1st 9" 2nd 11" Internal diameter at bottom of pinion teeth 1st 2nd

Wheel Shafts, diameter at bearings 1st 11" 2nd 17 1/2" diameters at wheel shroud, 1st Propelling Motor Shaft, diameter at bearings 16.31
as per rule 15.54 as fitted 16" Thrust Shaft, diameter at collars as per rule 17.04 as fitted 17 3/4" Is the shaft fitted with a continuous liner Yes

Tube Shaft, diameter as per rule 8.21 as fitted 7 7/8" Screw Shaft, diameter as per rule 6.15 as fitted 3 1/4" Is the after end of the liner made watertight in the propeller boss Yes

Bronze Liners, thickness in way of bushes as per rule 8.21 as fitted 7 7/8" Thickness between bushes as per rule 3 1/4" 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 In one piece Yes
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 No

Propeller, diameter 18'-0" Pitch mean 13'-11 3/4" No. of Blades 4 State whether Moveable No Total Developed Surface 121 square feet
If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Yes

Condenser Yes No. of Turbines fitted with astern wheels One main Bls. No. and size Two of 3" Weir's 2 Stage Turb. - Feed each by steam Turbine
How driven Two steam recip. 9 1/2" x 7" x 21"

Pumps connected to the Main Bilge Line No. and size Two 10" x 9" x 10" How driven by steam recip. Lubricating Oil Pumps, including Spare Pump, No. and size Two of 8 x 9 x 18"

Ballast Pumps, No. and size 1-10" x 9" x 10" Are two independent means arranged for circulating water through the Oil Cooler Yes
Pumps, No. and size: - In Engine and Boiler Room 4 of 3 1/2", 1 of 2 1/2" in Funnel Well In Holds, etc. Forward Hold (Junk) + Store, p+s each 2" hand pump suction

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1-13 1/2" on p. side Independent Power Pump Direct Suctions to the Engine Room In Pump Room In Forward Cofferdam - 1 Pumps of 4" In aft Cofferdam - 3" steam ejector

Bilges, No. and size 1 of 5" on S. side Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-bones 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 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 How are they protected
What pipes pass through the deep tanks 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 No worked from Cont'd over

If a Report also sent on the same day as this Report, the words which do not apply should be deleted.

BOILERS, &c. — (Letter for record, *S.*) Total Heating Surface of Boilers **7008 sq. ft.**

Is Forced Draft fitted **Yes** No. and Description of Boilers **2 Foster Wheeler "D" Type** Working Pressure **490 lbs**
(475 lbs at Spt)

Is a Report on Main Boilers now forwarded? **Yes** ✓

Is **a Donkey** Boiler fitted? **Yes (two)** ✓ If so, is a report now forwarded? **Yes** ✓

Is the donkey boiler intended to be used for domestic purposes only **No** ✓

Plans. Are approved plans forwarded herewith for Shafting **31-1-44** ✓ Main Boilers **3-9-43** ✓ Auxiliary Boilers ✓ Donkey Boilers **18-8-** ✓
(If not state date of approval)

Superheaters **3-9-43** ✓ General Pumping Arrangements **18-7-44** ✓ Oil Fuel Burning Arrangements **18-7-44**

Has the spare gear required by the Rules been supplied **Yes** ✓ **SPARE GEAR.**

State the principal additional spare gear supplied **as per Specification** ✓

THE NORTH EASTERN MARINE ENGINEERING CO. (1938) LTD.

The foregoing is a correct description,

John Neill

DIRECTOR

Manufacturer.

1944
Dates of Examination of principal parts—Casings ✓ Rotors ✓ Blading ✓ Gearing ✓
Wheel shaft ✓ Thrust shaft **27-9-44** Intermediate shafts **27-9-44** Tube shaft ✓ Screw shaft **23-10-44**
Propeller **at wharves 23-10-44** Stern tube **30-10-44 Sld** Engine and boiler seatings **28-11-44** Engine holding down bolts **12-2-45**
Completion of fitting sea connections **14-11-44 Sld** Completion of pumping arrangements **5-4-45** Boilers fixed **15-1-45** Engines tried under steam **at Quay 16-3-45**
Main boiler safety valves adjusted **27-3-45** Thickness of adjusting washers **PORT BLK 25/64 STAMP " 28/32** **STEAM DRUM SV. 5/16 " 11/32** **SPR SV. P. 5/16 " 11/32** **at sea 9-4-45**
Rotor shaft, Material and tensile strength } *See Report by British Corp Register* Identification Mark
Flexible Pinion Shaft, Material and tensile strength } Identification Mark
Pinion shaft, Material and tensile strength } Identification Mark
1st Reduction Wheel Shaft, Material and tensile strength } Identification Mark
Wheel shaft, Material } Identification Mark
Intermediate shafts, Material **F. Stl.** Identification Marks **LLOYDS 13107 HAI. & LLOYDS 8197 C.P.** Identification Mark **LLOYDS 13107 HAI.**
Screw shaft, Material **F. Stl.** Identification Marks **13107 HAI.** Identification Marks
Date of test **26-11-44 & 22-2-45.** Steam Pipes, Material **S.D. Stl.** Test pressures **Main. 1350 lbs wt**
at wharves 23-10-44 **at sea 9-4-45** **Dark. 540 lbs wt**

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 ✓ 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 a duplicate of a previous case ✓ If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.) **The Steam Turbines & Dr. Clearing were constructed under the Survey of British Corp Register (See attached Cert & Rpt). The Main Blrs & Donkey Boilers have been constructed under Special Survey of this Society, also Shafting, in accordance with the approved plans, Specification and the Society's Rules. The whole of the machinery has been installed under Special Survey, and the materials & workmanship are good.**

The machinery has been tested under working conditions at wharf and at sea with satisfactory results and is eligible, in my opinion for record LMC* 4.45.

The amount of Entry Fee ... £ : : When applied for, **23 APR 1945**

Special plus... £ **98 : 3/6** When received, **19**

Donkey Boiler Fee ... £ : : **25/6** Special Super

Travelling Expenses (if any) £ : : **19**

A Watt

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **FRI. 4 MAY 1945**

Assigned **LMC* 4.45** **F.D. C.L. 2 WTB 490 lb (Spt 475 lb)**

FITTED FOR OIL FUEL **4.45** FLASH POINT ABOVE 150° F.

2 D.B. 180 lb *machinery aft.*



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