

Report on Steam Turbine Machinery.

No. 20310.

Date of writing Report **15th Oct. 1954** When handed in at Local Office **20th Oct. 1954** Port of **MIDDLESBROUGH** Received at London Office **25 OCT 1954**
 No. in Survey held at **Middlesbrough** Date, First Survey **21st April 1953** Last Survey **11th October 1954**
 Reg. Book _____ (Number of Visits **122**.)

on the **steel screw turbine tanker "MELIKA"**. Tons (Gross **20551** / Net **12533**)
 Built at **Haver ton Hill**. By whom built **Furness Shipbuilding Co. Ltd.** Turb No. **462**. When built **1954**
 Engines made at **Hartlepool**. By whom made **Richardsons Westgarth (Hpl) Ltd.** Engine No. **2787**. When made **1954**
 Boilers made at **Hartlepool**. By whom made **do**. Boiler No. **2787**. When made **1954**
 Shaft Horse Power at Full Power **13750 Max.** Owners **Afran Transport & Co.** Port belonging to **Monrovia**
 Nom. Horse Power as per Rule **2750** Is Refrigerating Machinery fitted for cargo purposes **No.** Is Electric Light fitted **Yes**
 Trade for which Vessel is intended **Carrying petroleum in bulk.**

STEAM TURBINE ENGINES, &c.—Description of Engines **H.P. & L.P. turbines with double reduction gear.**
 No. of Turbines Ahead..... Direct coupled, single reduction geared to..... propelling shafts. No. of primary pinions to each set of reduction gearing
 Astern..... double reduction geared
 direct coupled to } Alternating Current Generator..... phase..... periods per second }
 for supplying power for driving..... Direct Current Generator } rated..... Kilowatts..... Volts at..... revolutions per minute;
 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.
Impulse Blading { No. of rows.....				
Reaction Blading { No. of stages.....				
{ No. of rows in each stage.....				

WEST HARTLEPOOL 19536 & NEWCASTLE REPORT 111137.

Shaft Horse Power at each turbine { H.P. I.P. L.P. }
 Revolutions per minute, at full power, of each Turbine Shaft { H.P. I.P. L.P. }
 Rotor Shaft diameter at journals { H.P. I.P. L.P. } Pitch Circle Diameter { 1st pinion..... 1st reduction wheel..... }
 { 2nd pinion..... main wheel..... } Width of Face { 1st reduction wheel..... }
 { main wheel..... }

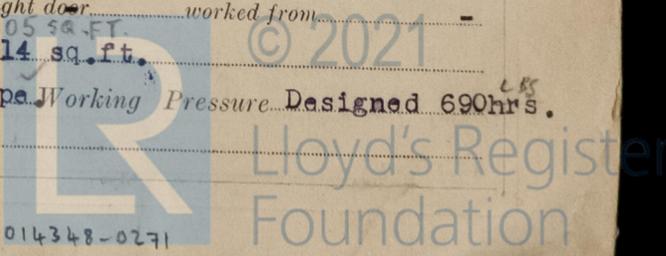
Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion..... 1st reduction wheel..... }
 { 2nd pinion..... main wheel..... }
 Flexible Pinion Shafts, diameter { 1st..... 2nd..... } Pinion Shafts, diameter at bearings { External Internal }
 1st..... 2nd..... diameter at bottom of pinion teeth 1st..... 2nd.....
 Wheel Shafts, diameter at bearings { 1st..... } diameter at wheel shroud, { 1st..... } Generator Shaft, diameter at bearings.....
 { main..... } Propelling Motor Shaft, diameter at bearings.....
 Intermediate Shafts, diameter as per rule..... as fitted..... **20 1/4"** Thrust Shaft, diameter at collars as per rule..... as fitted..... **21 5/8"**

Tube Shaft, diameter as per rule..... as fitted..... Screw Shaft, diameter as per rule..... as fitted..... **22 5/8"** Is the screw shaft fitted with a continuous liner { Yes..... }
 Bronze Liners, thickness in way of bushes as per rule..... as fitted..... **1.1/8"** Thickness between bushes as per rule..... as fitted..... **1.1/16"** 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.....
 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.....
 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**. If so, state type..... Length of Bearing in Stern Bush next to and supporting propeller **7'6 5/8"**

Propeller, diameter **21'0"** Pitch **16'0"** No. of Bades **4** State whether Moveable **No.** Total Developed Surface **205** square feet.
 Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine **Yes**. Can the H.P. or I.P. Turbines exhaust direct to the condenser **Yes**. No. of Turbines fitted with astern wheels **2** Feed Pumps { No. and size **3 - 3 stage Weir rotary 85T/hr. 2-recip. 21T/hr** }
 { How driven **steam turbine** }
 Pumps connected to the Main Bilge Line { No. and size **E.R 1 bilge & ballast 120 T/h 1-GS. 160T/hr. Main P.R. 64T/h. Fwd. P.R. 235 T/hr** }
 { How driven **steam recip.** }
 Ballast Pumps, No. and size **1 - 160 T/h 1-120 T/Hr.** Lubricating Oil Pumps, including Spare Pump, No. and size **2 - 100 ton/hr.**

Are two independent means arranged for circulating water through the Oil Cooler **Yes** Suctions, connected both to Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room **1-18" bilge injection 2-6" 5-4" cfd. ER. 1-2 1/2"** In Pump Room **Main 4-2 1/2"**
 Holds, &c. **Hold 2-2 1/2" /FP. Flat 2-2 1/2" /Ch. locker 1-2 1/2" /Fwd. Cfd. 2-2 1/2" /Fwd. P.R. 1-2 1/2" /Aft. Cfd. 1-2 1/2" /A.P. Flat 3-1 1/2"**
 Main Water Circulating Pump Direct Bilge Suctions, No. and size **1-18"** Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size **2 - 6"** 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 **No**. 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 level **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 **Fore Peak suction 4" Fwd.** Have they been tested as per rule **Yes**
 Are all Pipes, Cocks, Valves and Pumps in connection with the machinery and all other 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..... worked from.....

HEATERS, &c.—(Letter for record.....) Total Heating Surface of Boilers **2 @ 12557 & 25114 sq. ft.**
 Forced Draft fitted **Yes** No. and Description of Boilers **2-Foster Wheeler D Type Working Pressure. Designed 690hrs.**
 Report on Main Boilers now forwarded? **Yes - West Hartlepool Report No. 19536.**



steam generator.

Is ~~XXXXXX~~ Boiler fitted? **Yes** If so, is a report now forwarded? **Yes** Gls. C8385 & Mdb. 8962

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

Plans. Are approved plans forwarded herewith for Shafting **Yes** Main Boilers **No.** Auxiliary Boilers **No.** Donkey Boilers **No.**

Superheaters **No.** General Pumping Arrangements **Yes** Oil Fuel Burning Arrangements **Yes**

Geared turbines situated aft. Have torsional vibration characteristics of system been approved **Yes** Date of approval **13 - 11 - 51**

SPARE GEAR.

Has the spare gear required by the Rules been supplied **Yes**

State the principal additional spare gear supplied **Propeller Novoston Alloy No. Z1275. Screw shaft.**

For RICHARDSONS WESYGARTH (HARTLEPOOL) LIMITED.

The foregoing is a correct description,

Dates of Survey while building	During progress of work in shops - -	See West Hartlepool Report 19536 & Nwc Report 111137 (1953) Apr. 21, 29, Aug. 19, 21, Oct. 30, Nov. 5, 6, 10, 19, 25, Dec. 1, 3, 8, 9, 10, 14, 18, 22, 29
	During erection on board vessel - -	(1954) Jan. 6, 8, 11, 12, 14, 15, 21, 22, 26, Feb. 2, 5, 8, 9, 15, 19, 22, 25, Mar. 1, 3, 5, 8, 10, 11, 12, 19, 20, 25, 26, 30, 31, Apr. 1, 5, 8, 9, 12, 15, 20, 22, 23, 26, 28, 29, 30, May 3, 4, 5, 6, 7, 11, 13, 17, 18, 19, 20, 25, 26, 27, 31, June 1, 2, 3, 8, 10, 14, 15, 18, 22, 23, 28, July 2, 8, 9, 13, 15, 16, 22, Aug. 10, 17, 18, 19, 30, 31, Sept. 8, 10, 16, 17, 18, 19, 20, 21, 22, Oct. 1, 4, 5, 11. Total - 122.
	Total No. of visits	17, 18, 19, 30, 31, Sept. 8, 10, 16, 17, 18, 19, 20, 21, 22, Oct. 1, 4, 5, 11. Total - 122.
	Dates of Examination of principal parts - Casings	-
Rotors	-	
Blading	-	
Gearing	Final 20.9.54	

Wheel shaft - Thrust shaft - Intermediate shafts - Tube shaft - Screw shaft 14.12.53.

Propeller 14.12.53. Stern tube 9.12.53. Engine and boiler seatings 20.5.54. Engine holding down bolts 20.5.54.

Completion of fitting sea connections 14.12.54. Completion of pumping arrangements 7.9.54. Boilers fixed 2.3.54. Engines tried under steam 5.10.54.

Main boiler safety valves adjusted 6.9.54. Thickness of adjusting washers -

Rotor shaft, Material and tensile strength - Identification Mark -

Flexible Pinion Shaft, Material and tensile strength - Identification Mark -

Pinion shaft, Material and tensile strength - Identification Mark -

; Chemical analysis -

If Pinion Shafts are made of special steel state date of approval of chemical analysis, physical properties and heat treatment

1st Reduction Wheel Shaft, Material and tensile strength - Identification Mark -

Wheel shaft, Material - Identification Mark - Thrust shaft, Material O.H. Steel Identification Mark 7170

Intermediate shafts, Material O.H. Steel Identification Marks - Tube shaft, Material - Identification Marks -

Screw shaft, Material O.H. Steel Identification Marks - Steam Pipes, Material steel 1% Moly. Test pressure 1350lbs.

Date of test various. 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 -

Is this machinery a duplicate of a previous case No. If so, state name of vessel -

General Remarks. (State quality of workmanship, opinions as to class, &c.) Main engine, Boilers and Auxiliaries, which

have been built under Special Survey (See Hpl. Rpt. 19536 4a and 5c. Nwc. 111137, Mch. 15880

and Certificates, have now been installed in accordance with Rule Requirements and Approved Plans.

See Mdb. Rpt. 5c for installation of boilers.

All machinery seen under working conditions during basin and sea trials of several days duration.

Special attention paid to gears, and no gear hammer observed. Slight rough running noted at

HP & LP primary pinions between 50 and 60 r.p.m but not excessive. The Engine Builders have fit

a notice board on main control panel stating engines not to be run continuously between 48 and 67

Subsequent to sea trials, gears, examined together with turbine welded bedplate, L.P. casing and

casings, and found satisfactory. Heliston-Novoston Alloy propeller fitted No. Z.1274. Turbo

alternator welded gear casings, examined during full power trials and found satisfactory.

Prior to sea trials vessel examined in drydock. Nwc. Rpt. 111781.

In my opinion the machinery of this vessel is eligible for notation of *LMC 10.54 and TS(CL)

fitted for burning fuel oil 10.54. Flash Point above 150°F.

The amount of Entry Fee ... £ : : When applied for.

Installation. 179 - : : 22.10.19 54.

Special ... £ : : : When received.

Donkey Boiler Fee ... £ : : : When received.

Travelling Expenses (if any) £ : : : 19

Committee's Minute. TUESDAY 7 - DEC 1954

Assigned + LMC 10.54 (With Torsional Eng. E.)

2 WTB 69006

CL.



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Certificate (if required) to be sent to

(The Surveyors are requested not to write on or below the space for Committee's Minute)