

# REPORT ON STEAM TURBINE MACHINERY. No. 105384

26 JUN 1948

Date of writing Report 19 JUN 1948 Port of NEWCASTLE-ON-TYNE

No. in Survey held at North Shields. Date, First Survey 23.4.48. Last Survey 11.6.1948. Reg. Book. 24063 on the Turbo-electric "FORT FREDERICA" (Number of Visits 20)

Built at Portland, Oregon By whom built Kaiser Co. Inc. Yard No. 2401. When built 1945

Engines made at Lynn, Mass. By whom made General Electric Co. Engine No. 68257 When made 1945.

Boilers made at New York By whom made Combustion Eng. Co. Inc. Boiler Nos. 11989 11991 When made 1945.

Shaft Horse Power at Full Power 6600 Owners British Tankers Co. Ltd. Port belonging to LONDON.

Nom. Horse Power as per Rule 1485. Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Ya.

Trade for which Vessel is intended Carrying petroleum products in bulk.

## STEAM TURBINE ENGINES, &c.—Description of Engines Turbo-electric.

No. of Turbines 1 ahead, 1 astern. Direct coupled, single reduction geared to propelling shafts. No. of primary pinions to each set of reduction gearing 1. direct coupled to Alternating Current Generator 3 phase 62 periods per second. Direct Current Generator rated 5,400 Kilowatts 2,370 Volts at 3,715 revolutions per minute; for supplying power for driving one Propelling Motor, Type Marine synchronous rated 5,400 Kilowatts 2,370 Volts at 93 revolutions per minute. Direct coupled, single or double reduction geared to one propelling shaft.

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	7 7/8" x 1 1/2"	33 3/4" x 3 1/2"	2									
2ND	1"	34"	1									
3RD	1 1/4"	34 1/2"	1									
4TH	1 5/8"	35 1/2"	1									
5TH	1"	42 1/2"	1									
6TH	1 3/8"	43 1/2"	1									
7TH	2 1/8"	45"	1									
8TH	3 1/2"	47 3/4"	1									
9TH	5 3/8"	51 1/2"	1									
10TH	9"	56"	1									
11TH												
12TH												

Shaft Horse Power at each turbine { H.P. 6,600 I.P. 3,715 L.P. 93. Revolutions per minute, at full power, of each Turbine Shaft { 1st reduction wheel 93 main shaft 93

Rotor Shaft diameter at journals { H.P. 7 1/2" x 10" I.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 main diameter at wheel shroud, { 1st main Generator Shaft, diameter at bearings 10" Propelling Motor Shaft, diameter at bearings 17 1/2"

Intermediate Shafts, diameter as per rule 16.56" as fitted 17 1/2". Thrust Shaft, diameter at collars as per rule 17.39" as fitted 17 1/2" (18" at collar)

Tube Shaft, diameter as per rule as fitted. Screw Shaft, diameter as per rule 18.485" as fitted 18 3/4". Is the screw shaft fitted with a continuous liner Ya.

Bronze Liners, thickness in way of bushes as per rule 8.58" as fitted 1 1/8". Thickness between bushes as per rule 6.5" as fitted 1". Is the after end of the liner made watertight in the propeller boss Ya. If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner one length

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, slate type. Length of Bearing in Stern Bush next to and supporting propeller 7' 3"

Propeller, diameter 19'-6" Pitch 17'-6" No. of Blades 4. State whether Moveable No. Total Developed Surface 138.3 square feet. If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine. Can the H.P. or L.P. Turbine exhaust direct to the Condenser Ya. No. of Turbines fitted with astern wheels. Feed Pumps { No. and size Two, turbo, 200 gpm., one - 10" x 7" x 24" How driven steam.

Pumps connected to the Main Bilge Line { No. and size One - 7 1/2" x 6" Butterworth 450 gpm.; One - 7 1/2" x 6" S. 450 gpm. Two - Bilge 175 gpm. each. How driven electric motor.

Ballast Pumps, No. and size One, 7 1/2" x 6" concrete ballast pump 450 gpm. Lubricating Oil Pumps, including S, are Pump, No. and size Two 1 vertical 6' x 7' x 8" centrifugal 60 gpm.

Are two independent means arranged for circulating water through the Oil Cooler Ya. Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room 3" - 3"; Ford, effluent - Two 3"; fallometer compartment - One 3"; Main Pump Room Ford Two 3"; In Hold, etc. shaft alley:—Three 3"; boiler room drain one 3"; 14,000 gpm. after dry well: one 3" diam.

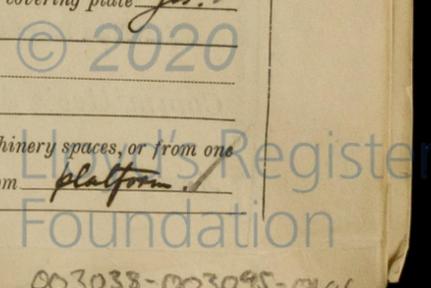
Main Water Circulating Pump Direct Bilge Suctions, No. and size One - 18" diam. Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size Two - 4" diam. Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Ya. Macosb strainers.

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 Ya. Are all Sea Connections fitted direct on the skin of the ship Ya, steel pipe welded to shell. Are they fitted with Valves or Cocks Valves.

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Ya. 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 Ya. Are the Blow Off Cocks fitted with a spigot and brass covering plate Ya.

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 Ya. 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 Ya. Is the Shaft Seal watertight Ya. Is it fitted with a watertight door Ya. worked from platform.



BOILERS, &c.—(Letter for record ) Total Heating Surface of Boilers 11,354 sq. ft.  
 Is Forced Draft fitted Yes No. and Description of Boilers Two 7 SM. type Working Pressure 500 lbs./sq. in.

Is a Report on Main Boilers now forwarded? Yes

Is { a Donkey } Boiler fitted?  If so, is a report now forwarded?   
 { an Auxiliary }

Is the donkey boiler intended to be used for domestic purposes only

Plans. Are approved plans forwarded herewith for Shafting \_\_\_\_\_ Main Boilers \_\_\_\_\_ Auxiliary Boilers \_\_\_\_\_ Donkey Boilers \_\_\_\_\_  
 (If not state date of approval)

Superheaters \_\_\_\_\_ General Pumping Arrangements \_\_\_\_\_ Oil Fuel Burning Arrangements \_\_\_\_\_

**SPARE GEAR.**

Has the spare gear required by the Rules been supplied Yes

State the principal additional spare gear supplied Cast iron propeller & screw shaft (LLOYD'S No. 2081, 27.5.48, C.P.).

The foregoing is a correct description,

Manufacturer.

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

Dates of Examination of principal parts—Casings \_\_\_\_\_ Rotors \_\_\_\_\_ Blading \_\_\_\_\_ Gearing \_\_\_\_\_  
 Wheel shaft \_\_\_\_\_ Thrust shaft \_\_\_\_\_ Intermediate shafts \_\_\_\_\_ Tube shaft \_\_\_\_\_ Screw shaft \_\_\_\_\_  
 Propeller \_\_\_\_\_ Stern tube \_\_\_\_\_ Engine and boiler seatings \_\_\_\_\_ Engine holding down bolts \_\_\_\_\_  
 Completion of fitting sea connections \_\_\_\_\_ Completion of pumping arrangements \_\_\_\_\_ Boilers fixed \_\_\_\_\_ Engines tried under steam \_\_\_\_\_  
 Main boiler safety valves adjusted \_\_\_\_\_ 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 \_\_\_\_\_  
 1st Reduction Wheel Shaft, Material and tensile strength \_\_\_\_\_ Identification Mark \_\_\_\_\_

Wheel shaft, Material \_\_\_\_\_ Identification Mark \_\_\_\_\_ Thrust shaft, Material \_\_\_\_\_ Identification Mark \_\_\_\_\_  
 Intermediate shafts, Material \_\_\_\_\_ Identification Marks \_\_\_\_\_ Tube shaft, Material \_\_\_\_\_ Identification Marks \_\_\_\_\_  
 Screw shaft, Material \_\_\_\_\_ Identification Marks \_\_\_\_\_ Steam Pipes, Material \_\_\_\_\_ Test pressure \_\_\_\_\_

Date of test \_\_\_\_\_ 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 \_\_\_\_\_ If so, state name of vessel T 2 tankers.  
 General Remarks (State quality of workmanship, opinions as to class, &c.) The machinery of this vessel has been constructed under the survey of the U.S. Coast Guards and the American Bureau of Shipping. Materials and workmanship considered good. The scantling and general arrangements have been checked and found in accordance with the plans on board the vessel. Machinery examined under working conditions and found satisfactory and reliable in my opinion to have records of LMC 6,48, WTBS 500 lbs./sq. in., sp. 473 lbs./sq. in., F.D., fitted for oil fuel 1945, F.P. above 150°F.

Total Heating Surface? M.N.

The amount of Entry Fee	£	:	:	When applied for,
Special	£	:	:	19
Donkey Boiler Fee	£	:	:	When received,
Travelling Expenses (if any)	£	:	:	19

W. C. Allen  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 23 JUL 1948  
 Assigned See minute on p. 19



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