

REC'D NEWYORK

JAN 13 1945

# REPORT ON STEAM TURBINE MACHINERY. No. 3764

Rpt. 4a.

Received at London Office 23 FEB 1945

Date of writing Report Sept. 14, 42 When handed in at Local Office 19 Port of Boston, Massachusetts  
 No. in Survey held at Lynn, Mass. Date, First Survey June 27, Last Survey September 1, 1942  
 Reg. Book on the Hull No. 232 S/S "Markay" (Number of Visits 5) Tons {Gross Net  
 Built at Chester, Pa. By whom built Sun S.B. & D.D. Co. Yard No. 232 When built 1942  
 Engines made at Lynn, Mass. By whom made General Electric Co. Engine No. HP 48364 LP 48365 When made 1942  
 Boilers made at \_\_\_\_\_ By whom made \_\_\_\_\_ Boiler No. \_\_\_\_\_ When made \_\_\_\_\_  
 Shaft Horse Power at Full Power 9000 Owners \_\_\_\_\_ Port belonging to \_\_\_\_\_  
 Nom. Horse Power as per Rule \_\_\_\_\_ Is Refrigerating Machinery fitted for cargo purposes \_\_\_\_\_ Is Electric Light fitted \_\_\_\_\_  
 Trade for which Vessel is intended \_\_\_\_\_

## STEAM TURBINE ENGINES, &c.—Description of Engines Cross Compound Turbines and double reduction gears

No. of Turbines Ahead Two ~~ONE~~ to One propelling shafts. No. of primary pinions to each set of reduction gearing Two  
 Astern One ~~ONE~~ 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 \_\_\_\_\_  
 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	1.135	30.040	1				1.340	38.710	1	1.940	44.328	2
2ND "	.750	18.630	1				1.870	39.570	1	4.355	48.642	1
3RD "	.870	18.870	1				2.640	40.910	1			
4TH "	.970	19.070	1				3.800	42.688	1			
5TH "	1.140	19.410	1				5.620	45.490	1			
6TH "	1.340	19.810	1				8.120	49.090	1			
7TH "	1.680	20.490	1				10.450	52.562	1			
8TH "	1.970	21.070	1									
9TH "												
10TH "												
11TH "												
12TH "												

Shaft Horse Power at each turbine { H.P. 4700 I.P. -- L.P. 4550 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 6522 I.P. -- L.P. 3790 }  
 Rotor Shaft diameter at journals { H.P. 8.8" I.P. 12.2" L.P. 18" } Pitch Circle Diameter { 1st pinion HP 8.8" LP 12.2" 1st reduction wheel LP 57.2" } Width of Face { 1st reduction wheel 17" main wheel 41" }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 16-1/2" 1st reduction wheel 15-1/4" 2nd pinion 30-3/4" main wheel 32-1/2" }

Flexible Pinion Shafts, diameter { 1st NONE 2nd \_\_\_\_\_ } Pinion Shafts, diameter at bearings External { 1st 6" 2nd 13" } Internal { 1st -- 2nd 9" } diameter at bottom of pinion teeth { 1st HP 8.401" LP 11.801" 2nd 17.353" }

Wheel Shafts, diameter at bearings { 1st 10" 2nd 24" } diameter at wheel shroud, { 1st 10-3/8" 2nd 26.943" } Generator Shaft, diameter at bearings \_\_\_\_\_ Propelling Motor Shaft, diameter at bearings \_\_\_\_\_

Intermediate Shafts, diameter as per rule \_\_\_\_\_ as fitted \_\_\_\_\_ Thrust Shaft, diameter at collars as per rule \_\_\_\_\_ as fitted \_\_\_\_\_ Tube Shaft, diameter as per rule \_\_\_\_\_ as fitted \_\_\_\_\_

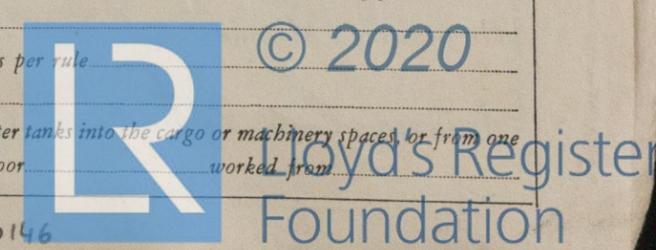
Screw Shaft, diameter as per rule \_\_\_\_\_ as fitted \_\_\_\_\_ Is the { tube screw } shaft fitted with a continuous liner \_\_\_\_\_ Bronze Liners, thickness in way of bushes as per rule \_\_\_\_\_ as fitted \_\_\_\_\_

Thickness between bushes as per rule \_\_\_\_\_ as fitted \_\_\_\_\_ 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 \_\_\_\_\_ 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 \_\_\_\_\_ Length of Bearing in Stern Bush next to and supporting propeller \_\_\_\_\_

Propeller, diameter \_\_\_\_\_ Pitch \_\_\_\_\_ No. of Blades \_\_\_\_\_ State whether Moveable \_\_\_\_\_ Total Developed Surface \_\_\_\_\_ 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 I.P. Turbine exhaust direct to the Condenser \_\_\_\_\_ No. of Turbines fitted with astern wheels \_\_\_\_\_ Feed Pumps { No. and size \_\_\_\_\_ How driven \_\_\_\_\_ }

Pumps connected to the Main Bilge Line { No. and size \_\_\_\_\_ How driven \_\_\_\_\_ } Ballast Pumps, No. and size \_\_\_\_\_ Lubricating Oil Pumps, including Spare Pump, No. and size \_\_\_\_\_ Are two independent means arranged for circulating water through the Oil Cooler \_\_\_\_\_ Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler 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 \_\_\_\_\_



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

Is Forced Draft fitted..... No. and Description of Boilers..... Working Pressure.....

Is a Report on Main Boilers now forwarded?.....

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

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. State the articles supplied:— **AS PER RULE**

The foregoing is a correct description,

*L. O. Grube*  
**General Electric Co.** Manufacturer

Dates of Survey { During progress of work in shops - - } June 27, July 4-18, August 31 and September 1, 1942  
 while { During erection on board vessel - - }  
 building { Total No. of visits } 5 visits

Dates of Examination of principal parts—Casings June 27 July 4-18 Rotors Sept. 1 Blading Sept. 1 Gearing June 27 July 4-18 Sept. 1-19

Wheel shaft June 27 Thrust shaft..... Intermediate shafts..... Tube shaft..... Screw shaft.....

Propeller..... Stern tube..... Engine and boiler seatings..... Engine holding down bolts.....

Completion of pumping arrangements..... Boilers fixed..... Engines tried under steam.....

Main boiler safety valves adjusted..... Thickness of adjusting washers 124,000 771 1-9-42 T.B.  
 Rotor shaft, Material and tensile strength O.H. Steel HP 121,000 LP 109,000 Identification Mark 772 1-9-42 T.B.

Flexible Pinion Shaft, Material and tensile strength HS HP 103,500 LS HP 100,000 Identification Mark 763-4-5-6

Pinion shaft, Material and tensile strength O.H. Steel HS LP 101,500 LS LP 105,000 Identification Mark 1-9-42 T.B.

1st Reduction Wheel Shaft, Material and tensile strength O.H. Steel 106,750 107,000 Identification Mark 767-8 1-9-42 T.B.

Wheel shaft, Material O.H. Steel Identification Mark 769 1-9-42 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.....

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.....

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. This machinery has been constructed under Special Survey in accordance with the approved plans. The workmanship and materials are good. The Installation has been tried out in the shop under 1/2 full power and found satisfactory. The unit has been forwarded to Sun S.B. & D.D. Company, Chester, Pa. When the installation has been satisfactorily installed aboard the vessel and to the satisfaction of the surveyor, it will, in my opinion, be eligible to receive the record of LMC, with date.

The amount of Entry Fee	£ 4,000.00	When applied for,
Special	£ 300.00	14-9 1942
Donkey Boiler Fee	£ :	When received,
Travelling Expenses (if any)	£ 5.00	6-10 1942

*Thomas Harris*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **NEW YORK JAN 13 1943**

Assigned See attached first Entry Report.



Rpt. 50  
 Date of writing  
 No. in Reg. Bk.  
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