

REC'D NEW YORK JAN 13 1943

Rpt. 4a.

# REPORT ON STEAM TURBINE MACHINERY. No. 8299

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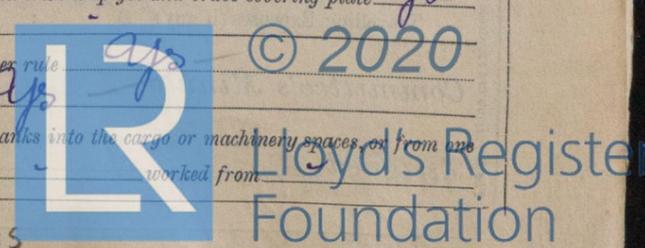
Date of writing Report 1 Nov 42 When handed in at Local Office 10 Nov 42 Port of Philadelphia  
 No. in Survey held at Chester, Pa Date, First Survey June 27, 1942 Last Survey 30 Sept 1942  
 Reg. Book. S/S MARKAY (Number of Visits 22) Gross Tons 10342  
 on the S/S MARKAY Net Tons       
 Built at Chester, Pa By whom built Sum Bros & Co Yard No. 232 When built 1942  
 Engines made at Lynn, Mass By whom made General Electric Co Engine No. HP48364 When made       
 Boilers made at Barkston, Ohio By whom made Babcock & Wilcox Boiler No. 1724-1-2 When made       
 Shaft Horse Power at Full Power 9000 Owners      Port belonging to       
 Nom. Horse Power as per Rule 1726 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 Cross Compound turbines and double reduction gears.

No. of Turbines Ahead Two Direct coupled, single reduction geared } to 1 propelling shafts. No. of primary pinions to each set of reduction gearing Two  
 Astern 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	1.220	44.328	2
2ND	.750	18.630	1				1.870	29.570	1	4.355	44.608	1
3RD	.870	18.870	1				2.640	40.910	1		48.642	
4TH	.970	19.070	1				3.800	42.688	1			
5TH	1.140	19.410	1				5.620	41.490	1			
6TH	1.340	19.810	1				8.170	49.090	1			
7TH	1.680	20.490	1				10.450	42.562	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. 6822 ✓ I.P.      L.P. 3790 ✓ }  
 Rotor Shaft diameter at journals { H.P.      I.P.      L.P.      } Pitch Circle Diameter { 1st pinion LP 12.2" 2nd pinion 18" } 1st reduction wheel LP 17.2" main wheel      } 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" 2nd pinion 30 3/4" } 1st reduction wheel 15 1/4" main wheel 32 1/2" }  
 Flexible Pinion Shafts, diameter { 1st      2nd None } Pinion Shafts, diameter at bearings External { 1st 6" 2nd 13" } Internal { 1st 13" 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" main 24" } diameter at wheel shroud, { 1st 10 3/8" main 26.943" } Generator Shaft, diameter at bearings      Propelling Motor Shaft, diameter at bearings       
 Intermediate Shafts, diameter as per rule 19.02" as fitted 19.5" } Thrust Shaft, diameter at collars as per rule 13.374" as fitted       
 Tube Shaft, diameter as per rule      as fitted      } Screw Shaft, diameter as per rule 20.71" as fitted 22.375" } Is the { tube } shaft fitted with a continuous liner { Yes }  
 Bronze Liners, thickness in way of bushes as per rule .937 as fitted .1964 } Thickness between bushes as per rule .703 as fitted .9375 } 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' 10" }  
 Propeller, diameter 20' 3" Pitch 20' 3" No. of Blades 4 } State whether Movable No } Total Developed Surface 141' 2" square feet. }  
 If 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. Turbine exhaust direct to the Condenser Yes } No. and size 2 Main 235 GPM. 1. Aux. 180 GPM } How driven Steam Turbine Steam Kett Simplex }  
 Pumps connected to the Main Bilge Line { No. and size 1- 175 GPM. } How driven Motor } 1. 600 GPM. } How driven Steam Turbine }  
 Ballast Pumps, No. and size 2 - 600 GPM. } Lubricating Oil Pumps, including Spare Pump, No. and size 2 - 300 GPM. }  
 Are two independent means arranged for circulating water through the Oil Cooler Yes } Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room 3 - 3 1/2" Eng room bilge. 1 - 2 1/2" Boiler room bilge. 1 - 3 1/2" bilge well. 2 - 3 1/2" bilge well. 1 - 4" In Pump Room }  
 In Holds, &c. 2 - 2 1/2" Ford pump room. 2 - 2 1/2" Dry stores Ford. } Steam ejectors for chain locker. }  
 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 1 - 5" } 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 man-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 Valves }  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stowhold plates Yes } Are the Overboard Discharges above or below the deep water line Both }  
 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 None } How are they protected      }  
 What pipes pass through the deep tanks 1 - 4" Ballast line } 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 None } Is it fitted with a watertight door      }  
 worked from      }



W996-0145

**BOILERS, &c.**—(Letter for record) Total Heating Surface of Boilers 10,500 sq  
 Is Forced Draft fitted Yes No. and Description of Boilers 2 Babcock & Wilcox Working Pressure 500 lbs  
 Is a Report on Main Boilers now forwarded? No  
 Is a Donkey Boiler fitted? No 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 April 1941 Main Boilers June 1941 Auxiliary Boilers \_\_\_\_\_ Donkey Boilers \_\_\_\_\_  
 (If not state date of approval)  
 Superheaters June 1941 General Pumping Arrangements Jan 1940 Oil Fuel Burning Arrangements Feb 1942  
 Has the spare gear required by the Rules been supplied. SPARE GEAR.  
 State the principal additional spare gear supplied. As per rule.

The foregoing is a correct description, \_\_\_\_\_ Manufacturer.

Dates of Survey while building  
 During progress of work in shops -- June 27, July 4, 18, Aug 31, Sept 1, 1942, July 24, Aug 3, 5, 11, 1942  
 During erection on board vessel --- Aug 11, 12, 29, Sept 3, 11, 14, 15, 18, 22, 23, 24, 29, 30, 1942  
 Total No. of visits 5 + 17 = 22.  
 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, 1942  
 Wheel shaft July 4, 18, June 27, Thrust shaft Intermediate shafts 2-17 April 42 Tube shaft Screw shaft 11 Aug 1942  
 Propeller 11 Aug 1942 Stern tube 12 Aug 1942 Engine and boiler seatings 11 Sept. 12 Aug 42 Engine holding down bolts 23 Sept 1942  
 Completion of fitting sea connections 24 Aug 42 Completion of pumping arrangements 30 Sept 42 Boilers fixed 14 Sept 42 Engines tried under steam 30 Sept 1942  
 Main boiler safety valves adjusted 29 Sept 42 Thickness of adjusting washers Locknuts  
 Rotor shaft, Material and tensile strength OH Steel HP 124,000 LP 109,000 Identification Mark 771 1-9-42 TB 772 1-9-42 TB  
 Flexible Pinion Shaft, Material and tensile strength HS HP 103,500 LS HP 100,000 Identification Mark 763, 764, 765, 766  
 Pinion shaft, Material and tensile strength OH Steel HS LP 101,500, LS LP 105,000 Identification Mark 1-9-42 TB  
 1st Reduction Wheel Shaft, Material and tensile strength OH Steel 106,750, 107,000 Identification Mark 767 1-9-42 768 1-9-42  
 Wheel shaft, Material OH Steel Identification Mark 769 1-9-42 Thrust shaft, Material Identification Mark  
 Intermediate shafts, Material OH Steel Identification Marks 6739, 6682 ON Tube shaft, Material Identification Marks  
 Screw shaft, Material OH Steel Identification Marks Spare 6728 Reg 6748 ON Steam Pipes, Material OH Steel Test pressure 1500 lbs  
 Date of test 11, 14, 15 Aug 1942 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 No 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 Yes If so, state name of vessel S/S SEAKAY.  
 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 & materials are good. The installation has been tried out in the shop under full power and found satisfactory. The unit has been forwarded to Sun SB & DD 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: This installation has been satisfactorily installed on board the vessel, tried out under full power & all found in good order. The installation is now in our opinion eligible to receive the record of +LMC 9. 42.

The amount of Entry Fee	\$ 30.00	When applied for,	
Special	\$ 370.00	When received,	30 <sup>th</sup> Nov. 1942
Donkey Boiler Fee	£		
Travelling Expenses (if any)	\$ 20.00		19

N. D. Cumham  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute NEW YORK JAN 13 1943  
 Assigned + LMC - 9 - 42.

NOTE - CL  
 2 WTB (Chk) 500 lbs.



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