

# REPORT ON STEAM TURBINE MACHINERY. No. 2346

Date of writing Report: **17th March 1948** When handed in at Local Office: **17th March 1948** Port of: **MOBILE, ALABAMA**  
 Date, First Survey: **17 Sept. 1947** Last Survey: **18th March 1948**  
 Survey held at: **Chickasaw & Mobile, Alabama** (Number of Visits: **25**)  
 Reg. Book: **s.s. "SOUTH AFRICA STAR" ex HMS "Reaper"** Tons {Gross: **8015**, Net: **4635**  
 Built at: **Tacoma, Washington** By whom built: **Seattle Tacoma Shipbldg. Corp.** Yard No. **49** When built: **1944**  
 Engines made at: **Milwaukee, Wis. U.S.A.** By whom made: **Allis Chalmers Manuf. Co.** Gears No. **152-400** Engine No. **10056 & 57** When made: **1943**  
 Boilers made at: **Carteret, New Jersey** By whom made: **Foster Wheeler Corp.** Boiler No. **1480 & 81** When made: **Oct. 1943**  
 Shaft Horse Power at Full Power: **8500** Owners: **Blue Star Line Ltd.** Port belonging to: **London**  
 Nom. Horse Power as per Rule: **1488** Is Refrigerating Machinery fitted for cargo purposes: **No** Is Electric Light fitted: **Yes**  
 Trade for which Vessel is intended: **Dry and perishable cargoes, ocean going.**

## STEAM TURBINE ENGINES, &c. — Description of Engines: **Gross Compound Impulse, Reaction**

Ahead: **2** No. of Turbines: **1** propelling shaft. No. of primary pinions to each set of reduction gearing: **1**  
 Astern: **1** double reduction geared.  
 Supplying power for driving: **Propelling Motors, Type**  
 Rated: **double reduction geared to 1** propelling shafts.

TURBINE STAGES	H. P.			H. P. (Cont.)			L. P. Reaction			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	1.281"	23.312"	1	1.75	20.50	1	1.75"	23.50"	2			
2nd "	0.85"	16.20"	3	1.90	20.80	1	2.10"	24.20"	2	1.625"	35.697"	1
3rd "	1.00"	16.50"	3	2.05	21.10	1	2.15"	24.30	1	1.875"	36.062"	1
4th "	1.10	16.70"	2				2.35"	24.70"	1	8.000"	42.000"	1
5th "	1.25	17.00"	2				2.55"	25.10"	1			
6th "	1.30	17.10"	1				2.70"	28.72"	1			
7th "	1.35	17.58"	1				3.05"	30.82"	1			
8th "	1.35	18.28"	1				3.80"	33.76"	1			
9th "	1.35	19.79"	1				3.90"	36.05"	1			
10th "	1.35	19.30"	1				5.20"	40.40"	1			
11th "	1.45	19.90"	1				6.40"	42.80"	1			
12th "	1.60	20.20"	1				7.80"	45.50"	1			
							9.60"	49.20"	1			

Shaft Horse Power at each turbine: H.P. **4125**, I.P. **-**, L.P. **4375**  
 Revolutions per minute, at full power, of each Turbine Shaft: H.P. **5004**, I.P. **-**, L.P. **4289**  
 1st reduction wheel: **665.3**, main shaft: **85**

Pinion Shaft diameter at journals: H.P. **6"**, I.P. **-**, L.P. **8"**  
 Pitch Circle Diameter: 1st pinion **7.754" HP**, 2nd pinion **9.046 LP**  
 1st reduction wheel: **58.318**, main wheel: **158.500**  
 Width of Face: 1st reduction wheel **2 @ 15 1/2"**, main wheel **2 @ 16-7/8"**

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings: 1st pinion **11-3/4"**, 2nd pinion **42"**  
 1st reduction wheel: **15 1/2"**, main wheel: **27-3/4"**

Movable Pinion Shafts, diameter at bearings: 1st **None**, 2nd **None**  
 External diameter at bearings: 1st **6"**, 2nd **None**  
 diameter at bottom of pinion teeth: 1st **16"**, 2nd **12"**  
 1st **7.326" HP**, 2nd **8.688" LP**

Wheel Shafts, diameter at bearings: 1st **16"-12" Int.**, main **21"-11" Int.**  
 Generator Shaft, diameter at bearings: **-**  
 Propelling Motor Shaft, diameter at bearings: **-**

Intermediate Shafts, diameter as per rule **19"**, Thrust Shaft, diameter at collars **Forward on Main Wheel Shaft**  
 Tube Shaft, diameter as per rule **-**, as fitted **Howarth**

Propeller Shaft, diameter as per rule **21"**, Is the shaft fitted with a continuous liner? **Yes**  
 Bronze Liners, thickness in way of bushes as per rule **1.075**

Thickness between bushes as per rule **0.86"**, 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 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 other appliance fitted at the after end of the tube shaft? **No**  
 Length of Bearing in Stern Bush next to and supporting propeller: **7 ft.**

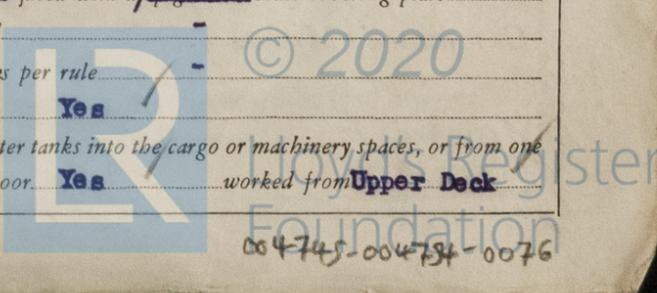
Propeller, diameter **21'-8"**, Pitch **21.669**, No. of Blades **4**, State whether Moveable: **No**, Total Developed Surface: **166.4** square feet.  
 Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine: **Yes**, Can the H.P. Turbine exhaust direct to the condenser: **Yes**  
 No. and size: **Two elect. recip. triplex 3-5/8x5, 125 g.p.m.**  
 (How driven) **Two steam simplex 14x9x24 & 11x7x24, 185 & 120 g.p.m.**

Pumps connected to the Main Bilge Line: (No. and size) **Two elect., centrif. with priming system, 600 g.p.m.**  
 (How driven) **One steam vert. duplex 10x12x12, 800 g.p.m.**  
 Bilge Pumps, No. and size: **Three bilge pumps**, Lubricating Oil Pumps, including Spare Pump, No. and size: **2 Elect. centrif. 325 g.p.m. each**  
 Are there 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: **Two 6" Direct, Two 2" Direct, Three 3" Main**

Holds, &c.: **Six 3" in Nos. 1, 3 & 4 Holds. Four 3" in FWD. Deep Tanks. Four 2 1/2" Drains from No. 5 Hold to Tunnel with self closing valves.**  
 Independent Power Pump Direct Suctions to the Engine Room: **One 16"**  
 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes or strainer plates: **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: **No**  
 (Strainers at Ends)

Are all Sea Connections fitted direct on the skin of the ship: **No, Steel Spools**, 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: **Yes**, Are the Overboard Discharges above or below the deep water line: **Valves**  
 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 spool piece and no brass covering plate: **Yes**

Are pipes pass through the bunkers: **None**, How are they protected: **-**  
 Are pipes pass through the deep tanks: **None**, 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: **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: **Yes**, worked from: **Upper Deck**



BOILERS, &c.— (Letter for record ) Total Heating Surface of Boilers **15424 square feet**

Is Forced Draft fitted **Yes** No. and Description of Boilers **Two F.W. "D" Type Marine** Working Pressure **525 lbs.**

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

Is a Donkey Boiler fitted? **No** If so, is a report now forwarded?

Plans. Are approved plans forwarded ~~for~~ for Shafting **Yes** Main Boilers **Yes** Auxiliary Boilers **-** Donkey Boilers **-**  
(If not state date of approval) **Forwarded with Sister Ship "RIOUW" Rpt. No. 2322**

Plans of air pipes herewith Superheaters **Yes** General Pumping Arrangements **Yes herewith** Oil Fuel Burning Arrangements **Yes**

Spare Gear. State the articles supplied: **Set of coupling bolts of each size, bearing bush complete for each journal of turbine and gears. Set of pads main thrust. Impeller and shaft for main circulating pump, 12 boiler tube stoppers, 1 set oil fuel burner equipment complete. Assorted studs, bolts, nuts, bars and plates. The remaining items of spare gear will be supplied at the earliest opportunity. Three "Paracoil" Evaporators by Davis Engineering Company Salt; No. 31748 July 45, 30 p.s.i. Fresh; No. 31196 June 45, 35 p.s.i. Contaminated No. 58435, Sept. 47, 55 p.s.i.**  
**Fire extinguishing appliances:- CO<sub>2</sub> system in engine room, service spaces and emergency generator room. Soda and acid and "Pyrene" bottles in engine room and service spaces. Steam smothering elsewhere. "Kiddie" smoke detecting and extinguishing system. Ample fire hoses supplied.**

The foregoing is a correct description,

Dates of Survey while building	During progress of work in shops	8	"08.28	"08.28	1	08.28	00.1	1	"08.28	"08.28
		8	"08.28	"08.28	1	08.28	00.1	1	"08.28	"08.28
		1	"08.28	"08.28	1	08.28	00.1	1	"08.28	"08.28
Total No. of visits		1	"08.28	"08.28	1	08.28	00.1	1	"08.28	"08.28

Dates of Examination of principal parts—Casings **7 November 1947** Rotors **7 November 1947** Blading **7 November 1947** Gearing **7 Nov. 1947**

Wheel shaft **7 Nov. 1947** Thrust shaft **7 Nov. 1947** Intermediate shafts **7 Nov. 1947** Tube shaft **-** Screw shaft **27 Sept. 1947**

Propeller **11 March 1948** Stern tube **27 Sept. 1947** Engine and boiler seatings **29 Sept. 1947** Engine holding down bolts **29 Sept. 1947**

Completion of pumping arrangements **4th March 1948** Boilers fixed **-** Engines tried under steam **15 March 1948**

Main boiler safety valves adjusted **4 March 1948** 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 **Steel** Test pressure **788 lbs.**

Date of test **7 November 1947** 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 **Yes** If so, have the requirements of the Rules been complied with **Yes**

Is this machinery a duplicate of a previous case **Yes** If so, state name of vessel **S.S. "REMPANG"**

General Remarks (State quality of workmanship, opinions as to class, &c.) **The main and auxiliary machinery, built and installed under ABS survey, has now been examined throughout, the materials and workmanship, so far as can be seen, are of good quality. The machinery has been tested under full trial conditions and all found to be satisfactory and suitable, in my opinion, to be classed with the Society with the record of LMC 3,48 and TS(GL) 3,48.**

**NOTE:- No gutterways fitted around settling tanks. Airpipes from adjacent fuel oil double bottom tanks are connected under the shelter deck and are smaller in area than their filling pipes. The boilers have only one feed water connection direct on the boiler drums.**

The amount of Entry Fee	£	:	When applied for,
and Special	<b>\$600.00</b>	:	<b>30 March 1948</b>
Donkey Boiler Fee	£	:	When received,
Travelling Expenses (if any)	<b>\$ 5.00</b>	:	19

NEW YORK APR 7 1948

Committee's Minute  
Assigned LMC-3,48

*[Signature]*  
Engineer Surveyor to Lloyd's Register of Shipping.

