

REPORT ON STEAM TURBINE MACHINERY. No. 9069

Received at London Office.

Date of writing Report 22nd February 1950 When handed in at Local Office 28th February, 1950 Port of Baltimore, Maryland
No. in Survey held at Baltimore, Maryland Date, First Survey 30th June Last Survey 14th February 1950
Reg. Book on the S.S. "SAN TOMÉ" (Number of Visits 30)
Built at Sparrows Point, Maryland By whom built Bethlehem Sparrows Point Shipyard, Inc. Yard No. 4471 Tons { Gross 17902 Net 11068
Engines made at Quincy, Mass. By whom made Bethlehem Steel Company Engine No. HP-4467 H-12 When built 1950
Boilers made at Carteret, N. J. By whom made Foster Wheeler Corp. Boiler No. 3283 When made 1949
Shaft Horse Power at Full Power 12,500 nominal Owners Afran Transport Co. Port belonging to Monrovia
Nom. Horse Power as per Rule 5240 MN Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes
Trade for which Vessel is intended Carrying Petroleum in bulk.

TEAM TURBINE ENGINES, &c.—Description of Engines 12,500 - Two Cylinder Series Flow
Ahead Two ~~Discontinuous~~ Propulsion Turbine Set-Cross Compound
No. of Turbines ~~Two~~ to One 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;
or supplying power for driving — Propelling Motors, Type —
rated — Kilowatts — Volts at — revolutions per minute. Direct coupled, single or double reduction geared to One propelling shafts.

TURBINE
BLADING.

	H. P.			L. 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 Imp.	3/4"	29 1/8"	1	1.750"	32.303"	1	3.277"	44.743"	1	1st 3/4"	48 1/8"	1
2ND " Wheel	1 3/8"	30"	1	1.800"	33.160"	1	3.965"	46.519"	1	Stage 1 1/4"	48 5/8"	1
3RD " "	1 1/8"	18 3/4"	5	1.876"	34.016"	1	4.113"	48.295"	1	3/4"	49 1/8"	1
4TH " "	1 3/8"	19 1/4"	4	1.951"	34.870"	1	4.633"	51.640"	1			
5TH " React.	1 5/8"	19 3/4"	4	2.027"	35.728"	1	5.173"	53.869"	1	2nd 4"	47"	1
6TH " "	1 7/8"	20 1/4"	3	2.102"	36.584"	1	6.074"	56.275"	1	Stage 6"	49"	1
7TH " "	2 1/8"	20 3/4"	3	2.223"	37.710"	1	7.354"	58.835"	1			
8TH " "	2 1/2"	21 1/2"	3	2.307"	38.814"	1	8.722"	61.571"	1			
9TH " "				2.516"	39.916"	1	10.250"	64.625"	1			
10TH " "				2.662"	41.768"	1			1			
11TH " "				2.808"	42.120"	1			1			
12TH " "				2.954"	43.222"	1			1			

Shaft Horse Power at each turbine { H.P. 6250 ✓
I.P. —
L.P. 6250 ✓
Revolutions per minute, at full power, of each Turbine Shaft { H.P. 4688 ✓
I.P. —
L.P. 2625 ✓
1st reduction wheel 765
main shaft 100 normal 103 rev/min

Motor Shaft diameter at journals { H.P. 5" & 5 1/2"
I.P. —
L.P. 9"
Pitch Circle { 1st pinion 20.193" 1st reduction wheel 69.304"
Diameter { 2nd pinion 21.951" main wheel 167.911"
Width of { 1st reduction wheel 10.875"
Face { main wheel 42.500"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion HS HP 35.500"
HS LP 36.000" 1st reduction wheel 13.4375"
2nd pinion 38.75" main wheel 30.25"

Flexible Pinion { 1st —
Shafts, diameter { 2nd —
Pinion Shafts, diameter at bearings { ~~Intersect~~ HP { 8.986" 2nd { 17.975"
LP { 8.985" 2nd { 17.975"
diameter at bottom of pinion teeth { 1st HP 10.928"
LP 19.813"
2nd 21.411"

Wheel Shafts, diameter at bearings { 1st 17.975"
main 22.477"
diameter at wheel shroud, { 1st 69.590" Generator Shaft, diameter at bearings —
main 168.311" Propelling Motor Shaft, diameter at bearings —

Intermediate Shafts, diameter as per rule 20" Thrust Shaft, diameter at collars as per rule 21.000"
as fitted 20.5" Tube Shaft, diameter as per rule —
as fitted —

Screw Shaft, diameter as per rule 21.83"
as fitted 23.0" Is the { ~~screw~~ } shaft fitted with a continuous liner { Yes ✓
Bronze Liners, thickness in way of bushes as per rule .914"
as fitted 1.125"

Thickness between bushes as per rule .6855"
as fitted .8593" 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 Length of Bearing in Stern Bush next to and supporting propeller 8' 10" ✓

Propeller, diameter 22' 0" Pitch 17' 9" No. of Blades 4 State whether Moveable No Total Developed Surface 175.2" square feet.

of 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. of Turbines fitted with astern wheels One L.P. Feed Pumps { No. and size Three (3) 300 G.P.M. (each)
How driven Steam Turbine

Pumps connected to the Main Bilge Line { No. and size Two 4" Pipe
How driven Motor

Ballast Pumps, No. and size Two 4" pipe Lubricating Oil Pumps, including Spare Pump, No. and size Two 475 G.P.M. (each)

Are two independent means arranged for circulating water through the Oil Cooler Yes

Pumps, No. and size: — In Engine and Boiler Room One main 5" bilge suction; Three 3 1/2" dia. branch bilge suction; Eng. Room; Two 2" dia.

in ~~Hold~~ Cargo Oil P.R. bilge suction; Fwd. P.R. 1-5" bilge suction — 2-3" Dry Cargo; 1-2 1/2" Ch. Locker; 2-2 1/2" Bos. Stores

Main Water Circulating Pump Direct Bilge Suctions, No. and size One 18" pipe 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 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 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 stokehold plates — 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 — Are the Blow Off Cocks fitted with a spigot ~~locking~~ covering plate Yes ✓

What pipes pass through the bunkers None How are they protected —

What pipes pass through the deep tanks 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 — Is it fitted with a watertight door — worked from —

211309 ft. for Reg. Bk.

BOILERS, &c.— (Letter for record) Total Heating Surface of Boilers 13420 sq. ft. including water walls
Is Forced Draft fitted Yes No. and Description of Boilers Foster Wheeler "D" Type Working Pressure 675 p.s.i.
Is a Report on Main Boilers now forwarded? Yes
Is a Donkey Boiler fitted? Yes If so, is a report now forwarded? Yes
Plans. Are approved plans forwarded herewith for Shafting Yes Main Boilers Yes LP Steam Generator Donkey Boilers -
(If not state date of approval)

Superheaters Yes General Pumping Arrangements Yes Oil Fuel Burning Arrangements Yes
Principal Spare Gear. State the articles supplied: Screwshaft LLOYD'S 9193 RK 22-3-49, Sleeve LLOYD'S 7485 WHR 28-3-49, Propeller LLOYD'S

One set of coupling bolts of each size used. Two main gear wheel shaft bearing bushes. Two complete bearing bushes for rotor shaft of each size used. Two complete bearing bushes for each pinion shaft. One set of thrust bearing shoes (6 per set). One complete set of packing rings and bearings for each size rotor gland. Six H.P. and six L.P. thrust pads. Two liners for cover plate adjustment of H.P. and L.P. thrust bearing. One set of valves of each size for liquid ends of each pump. One impeller shaft for main circulating pump and spare impellers or rotors, with shafts and special fittings for all other pumps. Boiler spares include two check valves complete, four burners complete with atomizers etc., 24 tube plugs and a quantity of assorted studs, bolts and nuts, steel bars and plates of various sizes.

The foregoing is a correct description,

Justice

Dates of Survey while building { During progress of work in shops - 28 June, 14, 15, 27, 28 July, 10, 17, 26, 29 August, 18, 20, 21, 24 October, 1949.
During erection on board vessel - 30 June, 5 July, 25 Aug. 20, 29, 30 Sept., 18, 19, 20, 27 Aug., 3, 4, 11, 15, 16, 17, 18, 23 Nov., 5, 8, 16, 21, 28, 30 Dec., 1949.
Total No. of visits, 6, 12 Jan., 6, 9, 13, 16 Feb., 1950.
43 17 August 17 August 4, 17 Nov., 1949
18-24 October, 1949 18-24 October, 1949 18-24 Oct., 1949 13 Feb., 1950

Dates of Examination of principal parts—Casings 18-24 October, 1949 Rotors 18-24 October, 1949 Blading 18-24 Oct., 1949 Gearing 13 Feb., 1950
Wheel shaft 4 Nov., 1949 Thrust shaft 30 June, 5 July Intermediate shafts 25-3-49 Tube shaft - Screw shaft 25-3-49
Propeller 27 October, 1949 Stern tube 19 Oct., 1949 Engine and boiler seatings Eng- 18 Nov., 1949 Engine holding down bolts 16 Dec., 1949
Completion of pumping arrangements 6 February, 1950 Boilers fixed 20 Sept., 1949 Engines tried under steam 9 February 1950

Main boiler safety valves adjusted 6 January 1950 Thickness of adjusting washers 81,000 p.s.i.
Rotor ~~shaft~~ Material and tensile strength O.H. Steel 103,500 p.s.i. Identification Mark AB 74
Flexible Pinion Shaft, Material and tensile strength - Identification Mark -
Pinion shaft, Material and tensile strength O.H. Forged Steel 1st Red HP - 100,000 p.s.i. LLOYDS 7290
2nd Red LP - 101,000 p.s.i. LLOYDS 7274
1st Reduction Wheel Shaft, Material and tensile strength 2nd Red HP - 105,500 p.s.i. LLOYDS 7064
LP - 104,500 p.s.i. LLOYDS 7160
Wheel shaft, Material O.H. Steel Identification Mark LLOYDS 3824 Thrust shaft, Material Integral with Shaft Identification Mark L.R. 3824
Intermediate shafts, Material O.H. Steel Identification Marks 9191 RK 22-2-49 Tube shaft, Material - Identification Marks -
Screw shaft, Material O.H. Steel Identification Marks 9192 RK 22-2-49 Steam Pipes, Material Car. Moly. Steel Test pressure 1350 p.s.i.
20, 29 Sept., 18, 20, 27, Oct. 3, 11, 15, 16, 18, 23, Nov. 5, 8, 16, 21, 28, 30, Dec., 1949 Is an installation fitted for burning oil fuel Yes

Date of test On Board 16, 2, 50
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 Tanker If so, have the requirements of the Rules been complied with -
Is this machinery a duplicate of a previous case Yes If so, state name of vessel S/S "JAHRA", "BURGAN", "CORO"

General Remarks (State quality of workmanship, opinions as to class, &c.) The machinery of this vessel has been built under Special Survey in accordance with the Society's Rules. Please refer to reports attached hereto No. 4281 Boston, No. 1373 Cleveland, Nos. 49351 and 49352 New York, also forging and casting reports. The machinery has now been fitted in this vessel including erection and completion of the Watertube Boilers and accessories as well as all auxiliaries. The workmanship and material throughout are good. The propelling machinery and auxiliaries have been tested under full load conditions and found in good and safe working condition. The vessel appears worthy to be classed with this Society with the notation LMC 2-50, Fitted for Oil Fuel F.P. above 150° F. 2-50 made in the Register Book.
The Torsional Vibration Calculations submitted with Baltimore Report No. 8911, S.S. "JAHRA".
Vessel was drydocked at Bethlehem Key Highway, 26th January to 5th February, 1950.

Gen. Arrangement—Machinery	Diagramatic—Bilge & Ballast (Fwd).	Stern Tube
" "—Main Steam Piping	" "—Steam System Machy Spaces.	Arrangements—Details of Shafting
Arrangements—L.P. Evaporator	" "—Modification Cargo Oil System	" "—Oil Fuel Burning
" "—Feed Condensate, Air Ejector	" "—No. 10 Wing Tanks for F.O.	
Diagramatic—Main Steam Piping	" "—Turbine Drains	
" "—Aux.	" "—F.O. Filling & Transfer	
" "—High Pressure Feed Piping	" " " " " Service	
" "—Bilge & Ballast (Aft).	" "—Propeller	

Arranged Fee
The amount of Entry Fee \$400.00 : When applied for,
Credit Boston \$300.00 : 9 March, 1950
Special \$:
Late Fee \$ 20.00 :
Donkey Boiler Fee \$:
Travelling Expenses (if any) \$ 60.00 :
Credit Boston \$ 8.00 :
When received, 19

C. H. Haman
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute
Assigned + Lmc 2.50
NEW YORK MAR 15 1950