

REPORT ON STEAM TURBINE MACHINERY. No. 8911

Received at London Office **18 AUG 1949**

Date of writing Report **20th June, 1949** When handed in at Local Office **21st June, 1949** Port of **Baltimore, Maryland.**

Survey held at **Sparrows Point, Maryland.** Date, First Survey **24th November, 1948** Last Survey **9th June, 1949**

Reg. Book on the **S.S. "JAHRA"** (Number of Visits **23**)

Tons { Gross **17905**
Net **11071**

When built **1948-1949**

By whom built **Bethlehem Sparrows Point Shipyard, Inc.,** Yard No. **4467**

Engines made at **Quincy, Mass.** By whom made **Bethlehem Steel Corp.** Engine No. **HP 7025 LP 15825** When made **1949**

Boilers made at **Carteret, N. J.** By whom made **Foster Wheeler Corp.** Boiler No. **3258 3259** When made **1949**

Shaft Horse Power at Full Power **12500** Owners **Kupan Transport Co.,** Port belonging to **Monrovia**

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 **12500 S.H.P.—Two Cylinder Series Flow Propulsion Turbine Set—Cross Compound.**

Ahead **Two** ~~Direct coupled~~ 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;
Direct Current Generator

supplying power for driving — Propelling Motors, Type —

Kilowatts — Volts at — revolutions per minute. Direct coupled, single or double reduction geared to — propelling shafts.

TURBINE LOADING.	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.
Imp.	1 3/8"	29 1/8"	1	1.750"	32.303"	1	3.277"	44.743"	1	1st	48 1/8"	1
"	1 1/8"	18 3/4"	5	1.876"	34.016"	1	4.113"	48.295"	1	Stage	48 5/8"	1
"	1 3/8"	19 1/4"	4	1.951"	34.870"	1	4.633"	51.640"	1	"	49 1/8"	1
Reac.	1 5/8"	19 3/4"	4	2.027"	35.728"	1	5.173"	53.869"	1	2nd	47"	1
"	1 7/8"	20 1/4"	3	2.102"	36.584"	1	6.074"	56.275"	1	Stage	49"	1
"	2 1/8"	20 3/4"	3	2.223"	37.710"	1	7.354"	58.835"	1			
"	2 1/2"	21 1/2"	3	2.370"	38.814"	1	8.722"	61.571"	1			
"				2.516"	39.916"	1	10.250"	64.625"	1			
"				2.662"	41.768"	1						
"				2.808"	42.120"	1						
"				2.954"	43.222"	1						

Horse Power at each turbine { H.P. **6250** ✓
I.P. **6250** ✓
L.P. **6250** ✓ } Revolutions per minute, at full power, of each Turbine Shaft { H.P. **4688** ✓
I.P. **2625** ✓
L.P. **2625** ✓ } 1st reduction wheel **765**
main shaft **100** NORMAL 103 on load

Shaft diameter at journals { H.P. **5"x5 1/2"**
I.P. **9"**
L.P. **9"** } Pitch Circle { 1st pinion **20.193"** 1st reduction wheel **69.304"** Width of { 1st reduction wheel **10.875"**
Diameter { 2nd pinion **21.951"** main wheel **167.911"** 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"** 1st reduction wheel **13.4375"**
2nd pinion **38.75"** main wheel **30.25"**

Pinion Shafts, diameter at bearings { 1st **HS HP 6.986"** 2nd **17.975"** diameter at bottom of pinion teeth { 1st **HS HP 10.928"**
2nd **8.985"** 2nd **17.975"** HS LP **17.813"**

Pinion Shafts, diameter at bearings { 1st **HS LP 17.975"** diameter at wheel **HS LP 69.590"** Generator Shaft, diameter at bearings —
main **22.477"** (Integral gears) { 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"** Tube Shaft, diameter as per rule —
as fitted **20.5"** as fitted **22.475"** as fitted —

Shaft, diameter as per rule **21.83"** Is the { screw } shaft fitted with a continuous liner { Yes ✓ } Bronze Liners, thickness in way of bushes as per rule **.914"**
as fitted **23.0"** as fitted **.8593"** If the liner is in more than one length are the junctions

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 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

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.

Angle Screw, are arrangements made so that steam can be led direct to the L.P. Turbine **Yes** Can the H.P. or L.P. Turbine exhaust direct to the

exhaust **Yes** No. of Turbines fitted with astern wheels **1 (L.P.)** Feed Pumps { No. and size **Three - 300 G.P.M. (Each)**
How driven **Steam Turbine**

is connected to the Main Bilge Line { No. and size **Two - 4" pipe**
How driven **Motor**

at Pumps, No. and size **Two - 4" pipe** Lubricating Oil Pumps, including Spare Pump, No. and size **Two - 475 G.P.M. (Each)**

no independent means arranged for circulating water through the Oil Cooler **Yes** Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge

No. and size:—In Engine and Boiler Room **One main bilge-2-5" Suctions = One Aux. Bilge - 2 - 5" Suctions. 1-3" P.R. Suction**

lds, &c. **Aft. P.R. One Bilge 2-3" Suctions. Fwd. P.R. One Bilge 1-2 1/2" CH. Locker Suction. 1-2 1/2" Bos. Store Suction.**

Water Circulating Pump Direct Bilge Suctions, No. and size **1-18" pipe** Independent Power Pump Direct Suctions to the Engine Room

No. and size **1-18" pipe** Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes **Yes** ✓

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** ✓

Sea Connections fitted direct on the skin of the ship **Yes** ✓ Are they fitted with Valves or Cocks **Valves** ✓

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** ✓

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 ~~blank~~ covering plate **Yes** ✓

at pipes pass through the bunkers **None** ✓ How are they protected —

at pipes pass through the deep tanks **4" Ballast Line** ✓ Have they been tested as per rule **Yes** ✓

all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times **Yes** ✓

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

partment to another **Yes** ✓ Is the Shaft Tunnel watertight — Is it fitted with a watertight door — worked from —

BOILERS, &c.— (Letter for record.....) Total Heating Surface of Boilers 13,420 sq. ft. Including Water Walls
Is Forced Draft fitted Yes No. and Description of Boilers 2, Foster Wheeler "D" Type Working Pressure 675 p.s.i.
Is a Report on Main Boilers now forwarded? Yes
Is a ~~Donkey~~ ~~auxiliary~~ Low Pressure Steam Generator fitted? Yes If so, is a report now forwarded? Yes
Plans. Are approved plans forwarded herewith for Shafting No Main Boilers No Auxiliary Boilers No Donkey Boilers -
(If not state date of approval) Approved plans being retained until completion of last Sister Ship - Hull 4
Superheaters No General Pumping Arrangements No Oil Fuel Burning Arrangements No
Principal
Spare Gear. State the articles supplied: Screw Shaft-Lloyd's 3814 RK 7.10.48, Sleeve-Lloyd's 7119 WHR 24.11.48.

Propeller-Lloyd's W.J.B. Heat No. 4077-5.11.49. One set of coupling bolts of each sized 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 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,

BETHLEHEM SPARROWS POINT
SHIPYARD, INC.

J. H. Hagan

Manufacture

Dates { During progress of work in shops - 3 Aug., 5 Oct., 10 Dec., 1948. 18, 19 Jan. 1949. 14, 15, 16 Feb. 1949. 16, 17, 23, 28, 29
Survey while building { During erection on board vessel - 24 Nov., 3 Dec. 1948. 11, 26 Jan., 1, 15 Feb., 7, 10, 11, 14, 15, 21, 24, 25 Mar., 12, 14, 18, 21, 27
Total No. of visits Apr., 10, 16, 18 May, 1 June, 1949. Total number of visits - 46
Dates of Examination of principal parts—Casing 16, 23, 29 March 1949. Rotor 16, 23, 29 March 1949 Blading 16, 23, 29 March 1949 Gearing 26 Feb. 1949
Wheel shaft 24 Mar. 1949 Thrust shaft Wheel Shaft Intermediate shafts 3 Dec. 1948 Tube shaft - Screw shaft 11 Jan. 1949
Propeller 26 Jan. 1949 Stern tube 1 Feb. 1949 Engine and boiler seatings 10 Mar. 1949 Engine holding down bolts 12 April, 1949
Completion of pumping arrangements 18 April, 1949 Boilers fixed 30 Dec. 1948 Engines tried under steam 1 June, 1949
Main boiler safety valves adjusted 10 May, 1949 Thickness of adjusting washers -
Rotor shaft, Material and tensile strength O.H. Steel. H.P.- 108000. L.P.- 85000. Identification Mark 8139 JKH 23.9.
Flexible Pinion Shaft, Material and tensile strength - Identification Mark 1623 LAD 19.1.
Pinion shaft, Material and tensile strength O.H. Steel. H.P. 1st Red. 107000. L.P. 1st Red. 108500 Identification Mark 1688 LAD 19.1.
1st Reduction Wheel Shaft, Material and tensile strength O.H. Steel 109500, 99500 Identification Mark 8022 LAD 19.1.
Wheel shaft, Material O.H. Steel Identification Mark 3620 LAD 19.1.49 Thrust shaft, Material Integral with wheel shaft Identification Mark -
Intermediate shafts, Material O.H. Steel Identification Mark 3779 RK 28.9.48 Tube shaft, Material - Identification Marks -
Screw shaft, Material O.H. Steel Identification Mark 3780 RK 28.9.48 Steam Pipes, Material Car. Moly Steel Test pressure 1350 p.s.i.
Date of test On board - 11, 15, 25 Mar. 14, 18, 21, 27 Apr. 1949. 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 Tanker If so, have the requirements of the Rules been complied with Yes
Is this machinery a duplicate of a previous case No If so, state name of vessel -

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 No. 4262 Boston, Nos. 48866 and 48867 New York. No. 1349 Cleveland, also Forgings and Castings reports attached hereto. The machinery has now been installed and fitted in this vessel, including erection and completion of Watertube Boilers and their accessories and all auxiliaries. The workmanship and material throughout are good. The propelling machinery and all auxiliaries have been tested under full load conditions and found in good and safe working condition. The vessel appears worthy to be classed with the Society with the Notation ~~LMC~~ 6.49, Fitted for Oil Fuel, F.P. above 150° F. 6.49 made in the Register Book.

Attached hereto are the Torsional Vibration Calculations for Hulls 4467, 4468, 4470 and 4471.

Torsionals approved 14/7/49 for 1000 lbs.

Arranged Fee
The amount of Entry Fee \$450.00 : When applied for,
Credit Boston 300.00 : July 26, 19 49
Special :
Donkey Boiler Fee : When received,
Late Fee 20.00 :
Travelling Expenses (if any) \$ 69.00 :
Credit Boston 20.00 :
NEW YORK JUL 27 1949

G. H. Hagan
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned + LMC-6, 49.

2 WTB (VPT) 675 lbs.



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Foundation