

# Report on Steam Turbine Machinery.

No. 10222

Rpt. 4a.

Date of writing Report 8th May 19 54 When handed in at Local Office Baltimore, Md. Received at London Office 29 JUN 1954  
 No. in Survey held at SPARROWS POINT, MARYLAND Date, First Survey 3rd. Sept. 1953 Last Survey 28th April 19 54  
 Reg. Book 36461 on the S.S. JOHN P.G. (Number of Visits 50)  
 Built at Sparrows Point, Maryland By whom built Bethlehem Sparrows Point Shipyard Inc. Yard No. 4522 When built 1954  
 Engines made at Quincy, Mass. By whom made Bethlehem Steel Co. Engine Nos. 7048 When made 1953  
 Boilers made at Carteret, N.J. By whom made Foster Wheeler Corp. Boiler No. 3644-45 When made 1953  
 Shaft Horse Power at Full Power 15,000 Owners Balboa Compania Naviera S. A. Port belonging to Panama  
 Nom. Horse Power as per Rule 3,000 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 Geared Turbines  
 No. of Turbines two direct coupled to one propelling shafts. No. of primary pinions to each set of reduction gearing two  
 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	H. P.	I. P.	L. P.	ASTERN.
Impulse Blading	No. of rows <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Reaction Blading	No. of stages <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
	No. of rows in each stage <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

Shaft Horse Power at each turbine H.P. — I.P. — L.P. — Revolutions per minute, at full power, of each Turbine Shaft H.P. — I.P. — L.P. — 1st reduction wheel — main shaft —

Rotor Shaft diameter at journals H.P. — I.P. — L.P. — Pitch Circle Diameter — 1st pinion — 1st reduction wheel — 2nd pinion — main wheel — Width of Face — 1st reduction wheel — main wheel —

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion — 1st reduction wheel — 2nd pinion — main wheel —

Flexible Pinion Shafts, diameter 1st — 2nd — Pinion Shafts, diameter at bearings External — Internal — 1st — 2nd — diameter at bottom of pinion teeth 1st — 2nd —

Wheel Shafts, diameter at bearings 1st — 2nd — diameter at wheel shroud 1st — 2nd — Generator Shaft, diameter at bearings — Propelling Motor Shaft, diameter at bearings —

Intermediate Shafts, diameter as per rule — as fitted 20.5" — 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 26" — Is the screw shaft fitted with a continuous liner yes

Bronze Liners, thickness in way of bushes as per rule — as fitted 1.125" — Thickness between bushes as per rule — as fitted .859" — 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 8'-10" aft, 3'-6" —

Propeller, diameter 21'-6" — Pitch 16'-6" — No. of Blades 6 — State whether Moveable no Total Developed Surface 222 sq. ft. —  
 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. Turbines exhaust direct to the Condenser yes

No. of Turbines fitted with astern wheels one Feed Pumps No. and size 3-300 G.P.M. each — How driven turbine —  
 Pumps connected to the Main Bilge Line No. and size Aft, two 450 & 400 G.P.M. — Fwd, two 150 & 275 G.P.M. — How driven MOTOR STEAM

Ballast Pumps, No. and size Two, 450 & 400 G.P.M. — Lubricating Oil Pumps, including Spare Pump, No. and size Two, 443 G.P.M. each —  
 Are two independent means arranged for circulating water through the Oil Cooler yes Suctions, connected both to Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room E.R.—one 5", three 3 1/2"; B.R.—one 5", two 2 1/2", four 1 1/2" In Pump Room one 3"

In Holds, &c. Dry cargo two 3", Bosn's Store two 2 1/2", chain locker one 2 1/2"  
 Main Water Circulating Pump Direct Bilge Suctions, No. and size one 18" — 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 yes 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 yes Are the Blow Off Cocks fitted with a spigot and covering plate yes What pipes pass through the bunkers none How are they protected —

What pipes pass through the deep tanks 4" ballast main — 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 —

BOILERS, &c.—(Letter for record 2 W.T.) Total Heating Surface of Boilers 21134 sq. ft. —  
 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

008201-008210-0158



a low pressure steam generator  
Is ~~at donkey~~ Boiler fitted? ☒ yes ☐ no If so, is a report now forwarded? ☒ yes ☐ no  
Is the donkey boiler intended to be used for domestic purposes only. ☐ no  
Plans. Are approved plans forwarded herewith for Shafting ☒ yes Main Boilers. ☒ yes Auxiliary Boilers. ☐ no Donkey Boilers. ☐ no  
(If not, state date of approval)  
Superheaters ☒ yes General Pumping Arrangements ☒ yes Oil Fuel Burning Arrangements ☒ yes  
Geared turbines ☐ no Have torsional vibration characteristics of system been approved ☒ yes Date of approval 22/3/54  
situated aft. Service speed 112 max 115 knots

### SPARE GEAR.

Has the spare gear required by the Rules been supplied. ☒ yes  
State the principal additional spare gear supplied. Screwshaft Lloyds 3651 RK 8-18-53, liner Lloyds 4613, 12-6-53, propeller nu  
Lloyds 3644-2 RK 7-5-53, Set of bearing shells for main turbines and reduction gears, Set of packing rings for  
turbines, One impeller and shaft for main circulating pump, Set of ball bearings for each rotary pump, Boiler  
spares include one feed water check valve, three burners complete with atomizers and an assortment of tube st

The foregoing is a correct description.

Dates of Survey while building  
During progress of work in shops - ☐ -  
During erection on board vessel - ☒ -  
Total No. of visits 50  
Sept. 3, 21, Oct. 13, 29, Nov. 3, 13, 23, Dec. 1, 7, 14, 17, Jan. 15, 20, 28, Feb. 2, 12, 17, 19, 23, 25, 26,  
March 1, 3, 4, 5, 8, 9, 10, 15, 16, 17, 18, 19, 22, 23, 24, 25, 26, April 2, 5, 7, 8, 9, 13, 19, 20,

Dates of Examination of principal parts—Casings. ☐ - Rotors ☐ - Blading ☐ - Gearing ☐ -  
Wheel shaft ☐ - Thrust shaft ☐ - Intermediate shafts 21-8-53 Tube shaft ☐ - Screw shaft 7-8-  
Propeller 5-4-53 Stern tube 14th, Sept. 53 Engine and boiler seatings 11th, Nov. 53 Engine holding down bolts 23rd  
Completion of fitting sea connections 12th, Feb. 54 Completion of pumping arrangements 19-4-54 Boilers fired 14-1-54 Engines tried under steam  
Main boiler safety valves adjusted 12-4-54 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 ☐ -

; Chemical analysis ☐ -

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment ☐ -  
1st Reduction Wheel Shaft, Material and tensile strength ☐ - Identification Mark ☐ -  
Wheel shaft, Material ☐ - Identification Mark ☐ - Thrust shaft, Material ☐ - Identification Mark ☐ -  
Intermediate shafts, Material O.H. Steel Identification Mark Lloyds 3653 RK Tube shaft, Material ☐ - Identification Marks ☐ -  
Screw shaft, Material O.H. Steel Identification Mark Lloyds 3643 RK Steam Pipes, Material Carbon Moly. Steel Test pressure 13  
Date of test 23rd, March 1954 Is an installation fitted for burning oil fuel ☒ yes ☐ no  
U.S.C.G.  
Is the flash point of the oil to be used over 150°F. ☒ yes ☐ no 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 Tanker 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 ☐ no If so, state name of vessel S.S. Orion Star

General Remarks. (State quality of workmanship, opinions as to class, &c.) The machinery of this vessel has been built  
Special Survey in accordance with the Society's Rules. Please refer to reports attached hereto, No. 52976 New  
and No. 1655, Cleveland, Ohio. The machinery has now been fitted in this vessel, the two watertube boilers  
and completed. The workmanship and material throughout are good. The propelling machinery and auxiliaries have  
tested under full load and found in good and safe working condition. The vessel appears worthy to be classed  
this Society with the notation L.M.C. 4-54, fitted for oil fuel F.P. above 150°F. made in the Register Book.  
Vessel was drydocked at Bethlehem Key Highway, Baltimore, Md. on 19th, April 1954.  
Please see attached list of approved plans forwarded with this report.

The amount of Entry Fee See Rept I When applied for ☐ -  
Special ☐ - 19  
Donkey Boiler Fee ☐ - When received ☐ -  
Travelling Expenses (if any) ☐ -  
The Committee's Minute NEW YORK JUN 9 1954  
Assigned + LMC 4.54

Rpt. 9a.

Port of Baltimore

Continuation of Report No. 10222

dated

on the 1st, 1954

1. Detail of propeller shaft forgings and sleeve
2. Stern tube
3. Arrangement and details of shafting
4. Arrangement of machinery - plans
5. Arrangement of machinery - elevation
6. Symbol list
7. Material list (1)
8. " " (2)
9. " " (3)
10. " " (4)
11. General notes (1)
12. " " (2)
13. " " (3)
14. Main steam piping
15. Aux. steam system boiler pressure 275 lbs. desuperheated.
16. Auxiliary steam 120 lbs machinery space.
17. Auxiliary steam system 120 lbs. deck & pump rooms.
18. Auxiliary exhaust & bleeder steam mach space.
19. Auxiliary exhaust sys. for deck machinery and ford pump room.
20. Turbo generator exhaust system.
21. Cargo pump exhaust.
22. Air ejector condensate & low pressure feed piping.
23. High pressure feed piping.
24. L. P. steam generating plant.
25. Main condenser circ. system.
26. Aux. condenser circ. system.
27. Atmospheric condenser circulating water system.
28. Five, sanitary & water service system.
29. Bilge & Ballast system cargo & fwd. pump rooms.
30. Bilge & Ballast system (Aft.)
31. Bilge & Ballast pump priming system.
32. F.P. filling & transfer system.
33. Fuel oil service system.
34. L.P. Distilling Plants.
35. Boiler blow system.
36. Safety and relief valve escape piping
37. Turbine drains
38. Turbine gland sealing system.
39. Turbine gland exhaust system.
40. Steam & fresh water drain collecting system
41. Lubricating oil service system.
42. Lubricating oil piping at turbines and gears.
43. Lubricating oil transfer and purifying system.
44. Turbine governor system.
45. Compressed air system.
46. Fresh water system.
47. Cargo oil & fuel oil tank heating drain main.
48. Cargo oil tank vent system.
49. Boiler feed control system.
50. Arrangement of machinery engine room sections.
51. Arrangement of machinery in boiler & pump rooms.
51. Detail of 8'-0" D x 11'-6" O. H. Marine deaerator.

Certificate (if required) to be sent to  
(The Surveyors are requested not to write on or below the space for Committee's Minute.)