

REPORT ON STEAM TURBINE MACHINERY. No. **N.Y.K. 52229**

Received at London Office

Report of writing Report **Feb. 25<sup>th</sup> 53** 19 When handed in at Local Office **Quincy, Mass.** 19 Port of **Quincy, Mass.** **16 APR 1953**  
Date, First Survey **Feb. 14<sup>th</sup> 1952** Last Survey **March 5<sup>th</sup> 1953**  
Reg. Book on the **steel screw steamer "CHRYSOI"** (Number of Visits) Tons {Gross **18,732**  
Net **11,652**  
Built at **Quincy, Mass.** By whom built **Bethlehem Steel Co.** Yard No. **1630** When built **1953**  
Engines made at **Quincy, Mass.** By whom made **Bethlehem Steel Co.** Engine No. When made **1953**  
Boilers made at **Carteret, N.J.** By whom made **Foster Wheeler Corp.** Boiler No. When made **1953**  
Shaft Horse Power at Full Power **15,000** Owners **Santander Compania Naviera S.A.** Port belonging to **Panama, R.P.**  
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 **Tanker.**

TEAM TURBINE ENGINES, &c.—Description of Engines **Cross Compound Geared Turbines.**

Head **Two** Direct coupled, } No. of Turbines **One** } **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	H. P.			L. P. (Reaction)			L. P. cont.			ASTERN. (Impulse)		
	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	3/4"	28" (MD)	1	1 1/4"	29.405"	1	12 3.00	38.820	1	1 3/4"	47	1
1st row fixed	1 1/16"	28"	1	2 1/8"	30.187	1	13 3.414	40.010	1	1 1/4"	47	1
2nd row moving	1 3/8"	28"	1	3 1/8"	31.027	1	14 3.832	41.368	1	2 1/4"	47	1
Reaction section				4"	31.754	1	15 4.250	42.726	1	2 1/2"	47	1
1st expansion	1 1/8"	17 1/8"	5	5"	32.528	1	16 4.810	44.743	1	3 1/4"	47	1
2nd "	1 3/8"	17 3/8"	4	6"	33.309	1	17 5.376	46.363	1	2nd stage		
3rd "	1 5/8"	17 5/8"	4	7"	34.039	1	18 6.530	47.863	1	1 4"	43	1
4th "	1 7/8"	17 7/8"	3	8"	34.996	1	19 7.844	49.177	1	1 5"	43	1
5th "	2 1/8"	18 1/8"	3	9"	35.952	1	20 9.227	50.560	1	2 6"	43	1
6th "	2 1/2"	18 1/2"	3	10"	36.908	1	21 10.696	51.864	1			
7th "				11"	37.864	1						

Shaft Horse Power at each turbine { H.P. **6150** }  
I.P. **7450** }  
L.P. **7450** }  
Revolutions per minute, at full power, of each Turbine Shaft { H.P. **11.308** }  
I.P. **7450** }  
L.P. **7450** }  
Motor Shaft diameter at journals { H.P. **5"** }  
I.P. **5"** }  
L.P. **9"** }  
Pitch Circle Diameter { 1st pinion **LP 20.193** }  
2nd pinion **LP 20.193** }  
1st reduction wheel **69.304** }  
main wheel **166.554** }  
Width of Face { 1st reduction wheel **21 3/4"** }  
main wheel **40"** }  
Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion **HP 35 1/2"** }  
2nd pinion **LP 36"** }  
1st reduction wheel **30 1/4"** }  
main wheel **30 1/4"** }  
Flexible Pinion Shafts, diameter at bearings { 1st **HP 7"** }  
2nd **LP 9"** }  
1st **LP 9"** }  
2nd **LP 9"** }  
diameter at bottom of pinion teeth { 1st **HP 10.928"** }  
2nd **LP 19.813"** }  
2nd **LP 21.411"** }  
Wheel Shafts, diameter at bearings { 1st **18"** }  
main **22 1/2"** }  
diameter at wheel shroud, { 1st **19.1875"** }  
main **25 1/8"** }  
Generator Shaft, diameter at bearings **✓**  
Propelling Motor Shaft, diameter at bearings **✓**  
Intermediate Shafts, diameter as per rule **20"**  
as fitted **20 1/2"** }  
Thrust Shaft, diameter at collars as per rule **22 1/2"**  
as fitted **22 1/2"** }  
Tube Shaft, diameter as per rule **9 1/2"**  
as fitted **1.125"**  
Screw Shaft, diameter as per rule **21.83"**  
as fitted **26"** }  
Is the tube screw }  
shaft fitted with a continuous liner } **Yes.** }  
Bronze Liners, thickness in way of bushes as per rule **9 1/2"**  
as fitted **1.125"**  
Thickness between bushes as per rule **.68"**  
as fitted **.875"** }  
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 }  
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 **21'-0"** Pitch **17'-0"** No. of Blades **5** State whether Moveable **No.** Total Developed Surface **195.5** square feet.  
Single 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 }  
Condenser **Yes.** }  
No. of Turbines fitted with astern wheels **One (LP)** }  
Feed Pumps { No. and size **Three - 300 galls./min (2-1st stage)** }  
How driven **steam turbine** }  
Pumps connected to the Main Bilge Line { No. and size **Two - 5" rotary** }  
How driven **electric motor** }  
Ballast Pumps, No. and size **Two - 5" rotary** Lubricating Oil Pumps, including Spare Pump, No. and size **Two - 6" rotary.**  
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 **One - 5", Two - 3 1/2", One - 4", One - 1 1/2"** Fire room, **One - 5"** }  
Holds, &c. **Fore hold, Two - 3", Fwd. pump rm: One - 3", Cargo pump rm: Two - 3"** }  
Main Water Circulating Pump Direct Bilge Suctions, No. and size **One - 18"** Independent Power Pump Direct Suctions to the Engine Room }  
No. and size **Two - 5"** }  
Are all the Bilge Suction pipes in Holds and Tunnel **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 }  
all Sea Connections fitted direct on the skin of the ship **Yes. chests.** }  
Are they fitted with Valves or Cocks **values.** }  
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 brass covering plate **—** }  
Do pipes pass through the bunkers **None.** }  
How are they protected **—** }  
Do pipes pass through the deep tanks **—** }  
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.** }  
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 }  
apartment to another **Yes.** }  
Is the Shaft Tunnel watertight **Yes.** }  
Is it fitted with a watertight door **—** }  
worked from **—** }



BOILERS, &c.— (Letter for record ) Total Heating Surface of Boilers 11,680 sq. ft. 21130 sq. ft.  
Is Forced Draft fitted Yes. No. and Description of Boilers Two - "D" type, oil fired Working Pressure 645/lb.  
Is a Report on Main Boilers now forwarded? Yes.  
Is { a Donkey } Boiler fitted? No. If so, is a report now forwarded?   
{ an Auxiliary }

Plans. Are approved plans forwarded herewith for Shafting Main Boilers Auxiliary Boilers Donkey Boilers  
(If not state date of approval)  
Superheaters General Pumping Arrangements Oil Fuel Burning Arrangements  
Spare Gear. State the articles supplied: one bronze propeller (5 bladed)  
one complete set of shell bearings & thrust shoes.  
Six H.P. casing joint bolts  
Eleven L.P. casing joint bolts  
Six bearing cap bolts (studs)  
One impeller shaft for main circulating pump.  
Twelve boiler tube stoppers  
One set oil fuel nozzles  
Quantity of assorted studs, nuts & bolts various sizes  
The foregoing is a correct description, M. J. Sullivan Manufacturer

Dates of Examination of principal parts— Casings Continuous  
During progress of work in shops - -  
of Survey During erection on board vessel - -  
while building Total No. of visits  
Dates of Examination of principal parts— Casings March 4<sup>th</sup> 1952 Rotors Feb. 1952 Blading May 1952 Gearing Jan. 5<sup>th</sup>  
Wheel shaft Thrust shaft Intermediate shaft May 1952 Tube shaft Screw shaft May 1952  
Propeller Dec. 52 Stern tube Nov. 52 Engine and boiler seatings Jan. 53 Engine holding down bolts Jan. 53  
Completion of pumping arrangements Feb. 16<sup>th</sup> 53 Boilers fixed Engines tried under steam Feb. 16<sup>th</sup>  
Main boiler safety valves adjusted Feb. 16<sup>th</sup> 53 Thickness of adjusting washers  
H.P. O.H. steel 90,000 lbs. elong: 21%, reduction 45% Heat No. 26 B 662 B1.  
Rotor shaft, Material and tensile strength L.P. O.H. steel 75,000 elong: 22% 40% Identification Mark 27 B 662 A.  
Flexible Pinion Shaft, Material and tensile strength Identification Mark  
Pinion shaft, Material and tensile strength please see Cleveland report 1563 Identification Mark  
1st Reduction Wheel Shaft, Material and tensile strength Sept. 29<sup>th</sup> 53 Identification Mark  
Wheel shaft, Material Identification Mark Thrust shaft, Material Identification Mark  
Intermediate shaft, Material Forged steel Identification Mark 81 M 084 A.I. Tube shaft, Material Identification Marks  
Screw shaft, Material Forged steel Identification Marks A.B. 928 A. Steam Pipes, Material Solid drawn O.H. Test pressure 1400 lb./sq. in.  
Date of test Feb. 24<sup>th</sup> 1953 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. 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 Fairlaika N.Y. 51871.  
La Cruz.

General Remarks (State quality of workmanship, opinions as to class, &c.) The main H.P. & L.P. turbines have been built under special survey in accordance with approved plans. The workmanship & materials are good. The hydraulic tests satisfactory. On completion, the turbines were run in shop at 15% over designed speed & found satisfactory. The above mentioned machinery with reduction gearing have been fitted in vessel. The workmanship & materials are good, tested and working conditions & found to be satisfactory. (NOTE. 26" dia; screw shaft has 4" dia; hollow centre for strain gauge attachments, per accompanying plan E. 4517-38-2.)  
In my opinion, the machinery of this vessel is eligible to have the record of L.M.C. 2.53 in the Register book.

The amount of Entry Fee £ : When applied for,  
Special £ 1500.- : MAR 26, 1953  
TESTING MATERIALS £ 260.- :  
Donkey Boiler Fee £ : When received,  
Travelling Expenses (if any) £ 150.- :  
TESTING MATERIALS (FITS) £ :  
Committee's Minute NEW YORK MAR 25 1953  
Assigned + L.M.C. 2.53  
C.L.