

## Report on Steam Turbine Machinery.

N.Y.K.  
No. 52639

Date of writing Report Aug. 12<sup>th</sup> 1953 When handed in at Local Office 19 Port of NEW YORK Received at London Office 11 SEP 1953  
 No. in Survey held at Quincy, Mass. Date, First Survey Dec. 18<sup>th</sup> 52 Last Survey Aug. 11<sup>th</sup> 53  
 Reg. Book \_\_\_\_\_ (Number of Visits Cont.)  
 on the steel, screw steamer "ANDROS HILLS" Tons {Gross 18,735  
 {Net 11,603  
 Built at Quincy, Mass. By whom built Bethlehem Steel Co. Yard No. 1632 When built 1953  
 Engines made at Quincy, Mass. By whom made Bethlehem Steel Co. Engine No. 1630 L.P. When made 1953  
 Boilers made at Carteret, N.J. By whom made Foster, Wheeler Corp. Boiler No. 85003 When made 1953  
 Shaft Horse Power at Full Power 15,000 Owners Rio Venturado Compania Naviera SA 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.

STEAM TURBINE ENGINES, &c.—Description of Engines Cross compound geared turbines.

No. of Turbines Two Direct coupled, single reduction geared 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  
 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  
BLADING.

	H. P.	I. P.	L. P.	ASTERN.
Impulse Blading { No. of rows	<u>2</u>	<u>Nil</u>	<u>0</u>	<u>2 stages</u>
Reaction Blading { No. of stages	<u>22</u>		<u>21</u>	<u>3 rows 1<sup>st</sup> stage</u>
Reaction Blading { No. of rows in each stage	<u>1</u>		<u>1</u>	<u>2 rows 2<sup>nd</sup> stage.</u>

Shaft Horse Power at each turbine { H.P. 6150 Revolutions per minute, at full power, of each Turbine Shaft { H.P. 4773 1st reduction wheel 800  
 { I.P. — { I.P. — main shaft 109 R.P.M.  
 { L.P. 7450 { L.P. 2673

Rotor Shaft diameter at journals { H.P. 5" Pitch Circle 1st pinion reduction wheel 69.304" Width of 1st reduction wheel 21 3/4"  
 { I.P. — Diameter 2nd pinion main wheel 166.554" Face main wheel 40"  
 { L.P. 9"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion H.P. 35 1/2 L.P. 36" 1st reduction wheel 30 1/4"  
 { 2nd pinion 38 3/4" main wheel 30 1/4"

Flexible Pinion Shafts, diameter { 1st 18" Pinion Shafts, diameter at bearings { External 1st HP 7" 2nd 18" diameter at bottom of pinion teeth { 1st HP 10.928"  
 { 2nd 22 1/2" { Internal 1st LP 9" 2nd 19" { 2nd LP 19.813"

Wheel Shafts, diameter at bearings { 1st 18" diameter at wheel shroud, { 1st 19.1875" Generator Shaft, diameter at bearings ✓  
 { main 22 1/2" { main 25 1/8" Propelling Motor Shaft, diameter at bearings ✓

Intermediate Shafts, diameter { as per rule 20" Thrust Shaft, diameter at collars { as per rule 21.83"  
 { as fitted 20 1/2" { as fitted 26"

Tube Shaft, diameter { as per rule 20" Screw Shaft, diameter { as per rule 26" Is the tube shaft fitted with a continuous liner Yes.  
 { as fitted 20" { as fitted 26" screw

Bronze Liners, thickness in way of bushes { as per rule .68" Thickness between bushes { as per rule .91" Is the after end of the liner made watertight in the  
 { as fitted .875" { as fitted 1.125" 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 one length.

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"

Propeller, diameter 21'-0" Pitch 17'-0" No. of Blades 6 State whether Moveable No Total Developed Surface 195.5 square feet.

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 L.P. Feed Pumps { No. and size Three - 300 gals/min (2 - single stage)  
 { How driven steam turbine { How driven steam turbine

Pumps connected to the Main Bilge Line { No. and size Two - 5" rotary Lubricating Oil Pumps, including Spare Pump, No. and size Two - 6" rotary.  
 { How driven electric motor

Ballast Pumps, No. and size Two - 5" rotary 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 one - 5" two - 3 1/2", one - 4", one - 1 1/2" In Fire Room one - 5" two - 2 1/2", one - 1 1/2"

In 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 Bilges, No. and size 2 (two - 5" 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, chests 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 brass covering plate ✓ What pipes pass through the bunkers None. How are they protected ✓

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

BOILERS, &c.—(Letter for record) Total Heating Surface of Boilers 21,130 sq. ft.

Is Forced Draft fitted Yes. No. and Description of Boilers Two II type F.W. Working Pressure 675 lbs./sq. in.

Is a Report on Main Boilers now forwarded? Yes.

If not, state whether, and when, one will be sent?

Yes.

Is a Report also sent on the Hull of the Ship?

NOTE.—The words which do not apply should be deleted.



Is { a Donkey Boiler fitted? No. If so, is a report now forwarded?   
 { an Auxiliary }   
 Is the donkey boiler intended to be used for domestic purposes only.   
 Plans. Are approved plans forwarded herewith for Shafting No. Main Boilers No. Auxiliary Boilers. Donkey Boilers.   
 (If not, state date of approval)   
 Superheaters. General Pumping Arrangements. Oil Fuel Burning Arrangements.   
 Geared turbines situated aft. Have torsional vibration characteristics of system been approved. Date of approval.

SPARE GEAR.

Has the spare gear required by the Rules been supplied.   
 State the principal additional spare gear supplied. spare propeller (Spare propeller housed on shore   
 one complete set of shell bearing & thrust shoes. stated to be by arrangement   
 six H.P. casing joint bolts   
 eleven L.P. casing joint bolts   
 six bearing cap bolts (studs)   
 one impeller & shaft for main circulating pump.   
 one set oil fuel nozzles   
 twelve boiler tube stoppers, quantity of assorted nuts & bolts.

The foregoing is a correct description.

Dates of Survey while building During progress of work in shops - continuous   
 During erection on board vessel - Dec: 18<sup>th</sup> 1952 to Aug: 11<sup>th</sup> 1953.   
 Total No. of visits.

Dates of Examination of principal parts—Casings. Dec. 18<sup>th</sup> 52. Rotors. Feb. 26<sup>th</sup> 53 Blading Mar. 21<sup>st</sup> 52 Gearing Aug. 6   
 Wheel shaft. Thrust shaft. Intermediate shafts. Tube shaft. Screw shaft. May. 14   
 Propeller June 15<sup>th</sup> 53 Stern tube June 5<sup>th</sup> 53. Engine and boiler seatings July 29<sup>th</sup> 53 Engine holding down bolts July 29   
 Completion of fitting sea connections. June 10<sup>th</sup> Completion of pumping arrangements July 29 Boilers fixed July 21<sup>st</sup> Engines tried under steam J.   
 Main boiler safety valves adjusted July 29<sup>th</sup> 53 Thickness of adjusting washers.   
 Rotor shaft, Material and tensile strength H.P. O.H. steel 90,000 lbs. elong. 21% reduction 45% Heat No. 26B6941   
 L.P. O.H. steel 75,000 lbs. elong. 22% " 40% Identification Mark 29B-802A   
 Flexible Pinion Shaft, Material and tensile strength.   
 Pinion shaft, Material and tensile strength. please see Cleveland report No. 1620 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. Identification Marks. Tube shaft, Material. Identification Marks.   
 Screw shaft, Material forged steel Identification Marks. Lloyd's 4387 BIM 63461 Steam Pipes, Material solid drawn O.H. Test pressure 140   
 Date of test June 11<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.   
 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.   
 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. If so, state name of vessel. SIS CHRYSSI N.Y.K. 522

General Remarks. (State quality of workmanship, opinions as to class, &c.) The main H.P. & L.P. turbines have been built   
 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 a   
 speed & found satisfactory. The above machinery with reduction gearing have been fitted in   
 tested under working conditions at sea & found to be satisfactory.   
 In my opinion the machinery of this vessel is eligible to have the record of:   
 L.M.C. B.53 and the notation T.S. (CL) in the Register Book.

T.V.C. 14/7/49 for 100 rpm. (turning with screws)

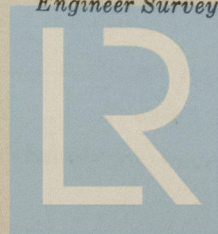
The amount of Entry Fee ... : : When applied for.   
 Special ... : : 19   
 Donkey Boiler Fee ... : : When received.   
 Travelling Expenses (if any) ... : : 19

Committee's Minute

Assigned + LMC 8.53.

W.P. Holmes

Engineer Surveyor to Lloyd's Register of Shipping.



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