

Report on Steam Turbine Machinery.

No. 15 157

Received at London Office

Date of writing Report Jan. 21st 1953 When handed in at Local Office 19 Port of Cleveland, Ohio
 No. in Survey held at Milwaukee, Wis. Date, First Survey Oct. 16th Last Survey Nov. 14th 1952
 Reg. Book --- (Number of Visits 2)
 --- on the Main Propulsion Gears for Bulk Oil Carrier S.S. ANDROS ISLAND Tons (Gross --- Net ---)
 Built at Quincy, Massachusetts By whom built Bethlehem Steel Co. Yard No. 1631 When built ---
 Engines made at --- By whom made --- Engine No. --- When made ---
 Boilers made at Milwaukee, Wis. By whom made Falk Corp. Boiler No. 51400100-4 When made 1952
 Shaft Horse Power at Full Power 13600 Owners Orion Shipping Co. Port belonging to ---
 Nom. Horse Power as per Rule --- Is Refrigerating Machinery fitted for cargo purposes --- Is Electric Light fitted ---
 Trade for which Vessel is intended ---

STEAM TURBINE ENGINES, &c.—Description of Engines. --

No. of Turbines --- *Ahead* --- *Astern* --- **Direct coupled,** --- **single reduction geared** to 1 propelling shafts. No. of primary pinions to each set of reduction gearing 2
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.

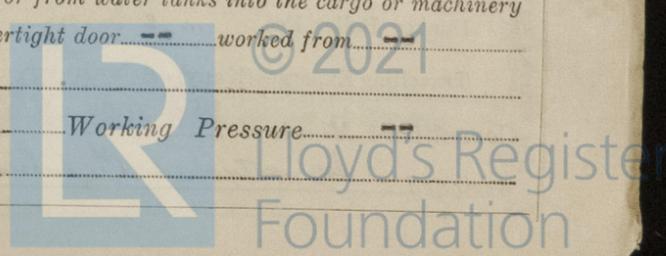
TURBINE BLADING.

	H. P.	I. P.	L. P.	ASTERN.
Impulse Blading				
No. of rows				
Reaction Blading				
No. of stages				
No. of rows in each stage				

Shaft Horse Power at each turbine H.P. 6150 ✓ I.P. --- L.P. 7450 ✓ **Revolutions per minute, at full power, of each Turbine Shaft** H.P. --- I.P. --- L.P. 2673 1st reduction wheel 779 main shaft 109
 Rotor Shaft diameter at journals H.P. --- I.P. --- L.P. --- **Pitch Circle Diameter** 1st pinion 11.308" 2nd pinion 20.193" 1st reduction wheel 69.304" main wheel 166.554" **Width of Face** 1st reduction wheel 10.875" x 2 main wheel 20" x 2
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 35.5" 2nd pinion 38.75" main wheel 30.25" 1st reduction wheel 13.437"
 Flexible Pinion Shafts, diameter 1st --- 2nd --- **Pinion Shafts, diameter at bearings** External HP 6.986" Internal LP 8.985" 1st 17.975" 2nd 17.975" diameter at bottom of pinion teeth 1st --- 2nd 22.768"
 Wheel Shafts, diameter at bearings 1st 17.975" main 22.477" **Integral** 1st 65.59" main 66.954" **Generator Shaft, diameter at bearings** --- **Propelling Motor Shaft, diameter at bearings** ---
 Intermediate Shafts, diameter as per rule --- as fitted --- **Thrust Shaft, diameter at collars** as per rule --- as fitted 22.475" ✓
 Tube Shaft, diameter as per rule --- as fitted --- **Screw Shaft, diameter** as per rule --- as fitted --- Is the *tube* --- *screw* --- shaft fitted with a continuous liner ---
 Bronze Liners, thickness in way of bushes as per rule --- as fitted --- **Thickness between bushes** as per rule --- as fitted --- Is the after end of the liner made watertight in the propeller-boss ---
 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 --- If so, state type --- Length of Bearing in Stern Bush next to and supporting propeller ---
 Propeller, diameter --- Pitch --- No. of Blades --- State whether Moveable --- Total Developed Surface --- square feet.
 If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine --- Can the H.P. or I.P. Turbines exhaust direct to the Condenser ---
 No. of Turbines fitted with astern wheels --- **Feed Pumps** No. and size --- How driven ---
 Pumps connected to the Main Bilge Line No. and size --- How driven ---
 Ballast Pumps, No. and size --- **Lubricating Oil Pumps, including Spare Pump, No. and size** ---
 Are two independent means arranged for circulating water through the Oil Cooler --- **Suctions, connected both to Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room** --- **In Pump Room** ---
 In Holds, &c. ---
 Main Water Circulating Pump Direct Bilge Suctions, No. and size --- **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 ---
 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 ---
 Are all Sea Connections fitted direct on the skin of the ship --- Are they fitted with Valves or Cocks ---
 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 --- 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 and brass covering plate --- What pipes pass through the bunkers --- 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 ---
 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 --- Is the Shaft Tunnel watertight --- Is it fitted with a watertight door --- worked from ---

BOILERS, &c.—(Letter for record. --)

Total Heating Surface of Boilers --- Is Forced Draft fitted --- No. and Description of Boilers --- Working Pressure ---
 Is a Report on Main Boilers now forwarded? ---



Is a Donkey an Auxiliary Boiler fitted? If so, is a report now forwarded?

Is the donkey boiler intended to be used for domestic purposes only?

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

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 To Rule Requirements

State the principal additional spare gear supplied _____

Copies of this report forwarded to London, New York and Quincy.

Plans of gears approved at N.Y. July 18, Aug. 3, 1948 and Jan. 7, 1953

See N.Y. letters to Falk Corp. dated October 19th and 29th, 1952 and January 9th, 1953

Note: The main gear wheel rim has twelve small holes. These have been thoroughly probed, cleaned, x rayed and show no depth and this gear is considered suitable for installation aboard the vessel.

See attached manufacturers report and picture.

The foregoing is a correct description.

Manufacturer.

Dates of Survey while building

During progress of work in shops - -	Oct. 16, Nov. 14, 1952
During erection on board vessel - - -	
Total No. of visits	2

Dates of Examination of principal parts—Casings Rotors Blading Gearing

Wheel shaft 11-14-52 Thrust shaft 11-14-52 Intermediate shafts Tube shaft Screw shaft

Propeller Stern tube Engine and boiler seatings Engine holding down bolts

Completion of fitting sea connections Completion of pumping arrangements Boilers fixed Engines tried under steam

Main boiler safety valves adjusted 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 O.H. Steel Identification Mark L.P. Lloyds 4286

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment H.P. Lloyds 542

1st Reduction Wheel-Shaft, Material and tensile strength O.H. Steel Identification Mark L.P. Lloyds 543

Wheel shaft, Material O.H. Steel Identification Mark Lloyds 545 Thrust shaft, Material O.H. Steel Identification Mark Lloyds 545

Intermediate shafts, Material Identification Marks Tube shaft, Material Identification Marks

Screw shaft, Material Identification Marks Steam Pipes, Material Test pressure

Date of test Is an installation fitted for burning oil fuel

Is the flash point of the oil to be used over 150°F 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 Bethlehem Hull 1630

General Remarks. (State quality of workmanship, opinions as to class, &c.) This set of main reduction gears were built under survey and to approved plans, the materials being tested by the Surveyors and the workmanship found of good quality. The unit was tested under load by the manufacturer. It was then dismantled and all components surface examined and found satisfactory (see note above).

In my opinion this unit is suitable to be incorporated in the vessels assignment of *LMC (with date) subject to it being installed aboard the vessel and tested under working conditions all to the Surveyors satisfaction.

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Certificate (if required) to be sent to _____

(Arranged fee to be charged on completion of the vessel)

The amount of Entry Fee	£	----	When applied for
Special	£	:	Jan. 29 53
Donkey Boiler Fee	£	:	When received
Travelling Expenses (if any)	£	85.00	19

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **NEW YORK MAY 20 1953**

Assigned *See attached 1st entry Rpt.*

