

Report on Steam Turbine Machinery.

No. 9915

11 SEP 1953

Rpt. 4a.

Received at London Office

Date of writing Report 26 Dec., 1952 When handed in at Local Office 26th Dec., 52 Port of PHILADELPHIA, PA.
 No. in Survey held at Trenton, New Jersey Date, First Survey 18th Nov., Last Survey 22nd Dec., 1952
 Reg. Book " (Number of Visits six)
 on the Generator Turbines S.S. ANDROS HILLS Tons (Gross Net)
 Built at Quincy, Mass. By whom built Bethlehem Steel Co. Yard No. 1632 When built 1953
 Engines made at Trenton, N.J. By whom made De Laval Steam Turb. Co. Engine No. 650602 When made 1952
 Boilers made at By whom made Boiler No. When made
 Shaft Horse Power at Full Power Owners Orion Shipping Co. Port belonging to
 Nom. Horse Power as per Rule Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted Yes
 Trade for which Vessel is intended Carrying Petroleum in bulk

STEAM TURBINE ENGINES, &c.—Description of Engines 400 K.W. A.C. Turbo Generators (2 units per ship)

No. of Turbines one ~~XXXXXX~~ Generator one ~~XXXXXX~~ No. of primary pinions to each set of reduction gearing one
 direct coupled to Alternating Current Generator 3 phase 60 periods per second rated 400 Kilowatts 450 Volts at 1200 revolutions per minute;
 for supplying power for driving Ship's Auxiliaries

TURBINE BLADING.	H. P.	XXXX	XXX	XXXXXXXX
Impulse Blading { No. of rows <u>8 Rows - 7 Stages</u>				
Reaction Blading { No. of stages <u> </u>				
{ No. of rows in each stage <u> </u>				

Shaft Horse Power at each turbine { H.P. I.P. L.P. } Revolutions per minute, at full power, of each Turbine Shaft { ~~XXX~~ 5905 ~~XXXX~~ } reduction wheel 1200
~~XXXX~~ XXXX

Rotor Shaft diameter at journals { ~~XXX~~ 2.495 ~~XXX~~ } Pitch Circle Diameter { 1st pinion 5.811 ~~XXXX~~ } reduction wheel 28.593 Width of Face { 1st reduction wheel 6-1/2" ~~XXXX~~ }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 5-7/8" ~~XXXX~~ } reduction wheel 6-3/16"
 { 2nd pinion ~~XXXX~~ }

Flexible Pinion Shafts, diameter { 1st Pinion Shafts, diameter at bearings External 2-1/2" 1st 2nd diameter at bottom of pinion teeth 5.573 }

Wheel Shafts, diameter at bearings { 4.494 ~~XXX~~ } diameter at wheel shroud, { 1st Generator Shaft, diameter at bearings 5.378" main Propelling Motor Shaft, diameter at bearings }

Intermediate Shafts, diameter { as per rule as fitted } 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 } 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

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

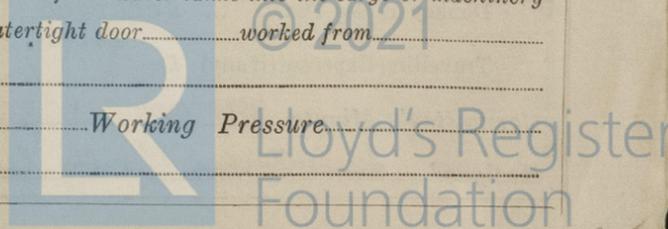
BOILERS, &c.—(Letter for record) Total Heating Surface of Boilers

Is Forced Draft fitted No. and Description of Boilers Working Pressure

Is a Report on Main Boilers now forwarded?

cc: New York Surveyors

011341-011351-0075



Is a Donkey Boiler fitted? 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..... 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.....
 State the principal additional spare gear supplied..... As specified.

The foregoing is a correct description.

DE LAVAL STEAM TURBINE COMPANY
 H. G. Baxey, Vice President

Manufacturers

Dates of Survey while building
 During progress of work in shops - - 18th and 20th November, 12th, 13th, 20 and 22nd December, 1952.
 During erection on board vessel - - -
 Total No. of visits.....

Dates of Examination of principal parts—Casings..... Rotors..... Blading..... Gearing.....
 Wheel shaft..... Thrust shaft..... 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... O.H. Steel 75,000 lbs. (Spec. DE1006) Identification Mark 28 C 371
 Flexible Pinion Shaft, Material and tensile strength..... Identification Mark.....
 Pinion shaft, Material and tensile strength... O.H. Steel 105,000 lbs. (Steel CFM) Identification Mark KD 416 DJ
 ; 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..... 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, Quincy Hull No. 1630.

General Remarks. (State quality of workmanship, opinions as to class, &c.) These turbo generators have been built under the Special Survey of the Society's Surveyors in accordance with approved plans, New York letters and otherwise in conformity with the Society's Rules.

The materials and workmanship are good and the tests required by the Rules have been carried out except when, under special circumstances, American Bureau of Shipping material tests have been accepted. The turbines have been examined and tested under working conditions in the shop coupled to their respective generators which also have been built under Special Survey (3S & 4S 46P316 J.M.G.), afterwards part opened out and found satisfactory.

These units will be forwarded to Bethlehem, Quincy Shipyard for installation in their Hull No. 1632 and have been stamped for identification as follows:-

Serial 650602	Serial No. 650603
LLOYD'S	LLOYD'S
No. 2942	No. 2943
12.12.52	22.12.52
D.J.A.	D.J.A.

The amount of Entry Fee ... £	Inclusive	When applied for.
Special ... £	fee	19
Donkey Boiler Fee ... £	to be	
	charged	When received.
	later.	
Travelling Expenses (if any) £		19

D. J. Archibald
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **NEW YORK AUG 26 1953**
 Assigned *See attached 1st entry rpt.*



Certificate (if required) to be sent to the space for Committee's Minute.

The Surveyors are requested not to write on or below