

Rpt. 4a.

Report on Steam Turbine Machinery.

No. 4481

Date of writing Report 21, August, 1953 When handed in at Local Office 19 Port of Boston, Massachusetts Received at London Office 23 SEP 1953
 No. in Survey held at Lynn, Massachusetts Date, First Survey 6, May Last Survey 18, July 19 53
 Reg. Book on the "MARE ADRIACUM" (Number of Visits 6)
 Built at Trieste, Italy By whom built Cantieri Riuniti Dell'Adriatico Tons (Gross) (Net)
 Engines made at Lynn, Mass. By whom made General Electric Co. Yard No. 1773 Turbine 97893 When built 1953
 Boilers made at By whom made Turbine No. 97895 When made
 Shaft Horse Power at Full Power 16,000 Owners Fratelli d'Amico Armatori Boiler No. When made
 Nom. Horse Power as per Rule Is Refrigerating Machinery fitted for cargo purposes Port belonging to
 Trade for which Vessel is intended Is Electric Light fitted Yes

STEAM TURBINE ENGINES, &c.—Description of Engines. Cross Compound Double Reduction ✓
 No. of Turbines Ahead Two Direct coupled, to one propelling shafts. No. of primary pinions to each set of reduction gearing two
 Astern One ~~single reduction geared~~ double reduction geared
 direct coupled to Alternating Current Generator phase periods per second
 for supplying power for driving Direct Current Generator rated Kilowatts Volts at revolutions per minute;
 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>8</u>		None		
Reaction Blading { No. of stages <u>8</u>		None	8	3
{ No. of rows in each stage <u> </u>			8	2

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

Shaft Horse Power at each turbine H.P. 8000 Revolutions per minute, at full power, of each Turbine Shaft H.P. 6854 1st reduction wheel 763
 (Referred to prop. shaft) L.P. 8000 H.P. 10,0004" I.P. 3393 main shaft 110
 Rotor Shaft diameter at journals H.P. 4" L.P. 6-1/2" H.P. 89.80" L.P. 65.473" Width of Face { 1st reduction wheel 19" plus 2-1/2"
 H.P. 4" L.P. 6-1/2" Diameter { 1st pinion 14.7266" H.P. 15-1/2" L.P. 15-1/2" main wheel 150.33" H.P. 44" plus 4"
 L.P. 4-1/2" 6-1/2" 2nd pinion 21.667" H.P. 15-1/2" L.P. 15-1/2" 1st reduction wheel H.P. 15-1/2"
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 31" main wheel 35" L.P. 15-1/2"
 Flexible Pinion Shafts, diameter at bearings External H.P. 5" L.P. 13.0" 2nd pinion 31" main wheel 35" L.P. 15-1/2"
 1st H.P. 7.682" Pinion Shafts, diameter at bearings Internal H.P. 6" L.P. 9-1/4" diameter at bottom of pinion teeth H.P. 11.269"
 2nd L.P. 9.000" 9" H.P. 10" L.P. 10" Generator Shaft, diameter at bearings 2nd. 20.859"
 Wheel Shafts, diameter at bearings { 1st 9" 24" diameter at wheel shroud, (at hub fit) L.P. 10" 26.700" Propelling Motor Shaft, diameter at bearings
 Intermediate Shafts, diameter as per rule as fitted Thrust Shaft, diameter at collars as per rule 13.375" as fitted
 Tube Shaft, diameter as per rule as fitted Screw Shaft, diameter as per rule as fitted
 Bronze Liners, thickness in way of bushes as per rule as fitted Thickness between bushes as per rule as fitted
 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
 Propeller, diameter Pitch No. of Blades Length of Bearing in Stern Bush next to and supporting propeller square feet.
 If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Yes Total Developed Surface 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 How driven
 (L.P. Turbine)
 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 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 stowhold 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 How are they protected
 What pipes pass through the bunkers Have they been tested as per rule
 What pipes pass through the deep tanks Are all Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times
 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?

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



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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. Standard list as specified by the American Bureau of Shipping.

The foregoing is a correct description.

J. J. Moore - Turbine Eng Div
General Electric Co 8/53 Manufacture

Dates of Survey while building: During progress of work in shops - - May 6 - 22, July 17 & 18, 1953
 During erection on board vessel - - -
 Total No. of visits 6

Dates of Examination of principal parts: Casings May 22, July 17 Rotors July 18 Blading July 18 Gearing May 6-7

Wheel shaft May 6-7 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, L.P. 100,700 PSI; H.P. 110,000 PSI Identification Mark
 Pinion shaft, Material and tensile strength O.H. Steel - HS HP 162,500
 LS LP 146,875 Identification Mark
 Pinion shaft, Material and tensile strength O.H. Steel LS HP 152,000
 LS LP 154,500 Identification Mark

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment June 16, 1953
 1st Reduction Wheel Shaft, Material and tensile strength O.H. Steel - H.P. 108,000 PSI
 L.P. 91,250 PSI Identification Mark

Wheel shaft, Material Identification Mark Thrust shaft, Material O.H. Steel 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 If so, state name of vessel

General Remarks. (State quality of workmanship, opinions as to class, &c.) **This machinery has been completed under Special Survey in accordance with approved plans. The forgings and castings were tested by A. B. S. Surveyors and for particulars, please refer to attached report. The workmanship and materials are good. The turbines and gears have been tried out separately in the shop under no load conditions and found satisfactory. The units have been forwarded to Trieste, Italy.**

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

The amount of Entry Fee ... : : When applied for. H.P. Turbine No. 97893
 Special ... 1003 : 60 : 21, Aug 19 53 LLOYD'S 600
 Donkey Boiler Fee ... : : When received. 22-5-53 T.B. Engineer Surveyor to Lloyd's Register of Shipping.
 Travelling Expenses (if any) 20 : 00 : L.P. Turbine No. 97895
 Committee's Minute NEW YORK SEP 2 1953 W.S.H. LLOYD'S Gear No. 104800
 Assigned Transmit to London. 7-18-53 T.B. 7-5-53
 See Tri. Rpt. 4.



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