

GENERATOR

Report on Steam Turbine Machinery.

Rpt. 4a.

1831 YKA

No. 3525 K O B E

Date of writing Report 19... When handed in at Local Office... Port of YOKOHAMA... Received at London Office... No. in Survey held at HITACHI, INNOSHIMA, JAPAN... Date, First Survey 28th FEB. 1955... Last Survey 23rd FEB 1956... on the Steel Single Screw Steamer "ALEXANDRA I" (Number of Visits 56)... Built at INNOSHIMA, JAPAN... By whom built HITACHI SHIPBUILDING & ENGINEERING CO., LTD. INNOSHIMA SHIPYARD... Engines made at HITACHI, IBARAGI... By whom made HITACHI WORKS, HITACHI LTD... Boilers made at HITACHI, IBARAGI... By whom made HITACHI WORKS, HITACHI LTD... Shaft Horse Power at Full Power 700 X 2... Owners LIBERIAN TRANSOCEAN NAVIGATION CORPORATION... Nom. Horse Power as per Rule 140 X 2... Is Refrigerating Machinery fitted for cargo purposes No... Is Electric Light fitted YES... Trade for which Vessel is intended OCEAN GOING

STEAM TURBINE ENGINES, &c.—Description of Engines MULTISTAGE IMPULSE TYPE

No. of Turbines 1... Direct coupled, single reduction geared... double reduction geared... to 650 KVA GENERATOR propelling shafts... No. of primary pinions to each set of reduction gearing 1... direct coupled to Alternating Current Generator 3 phase 50 periods per second... Direct Current Generator... rated 520 Kilowatts 440 Volts at 1500 revolutions per minute; 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 table with columns: H.P., I.P., L.P., ASTERN. Rows: Impulse Blading (No. of rows, No. of stages), Reaction Blading (No. of rows in each stage).

Shaft Horse Power at each turbine... H.P. 700... I.P. 10,000... L.P. 1,500... Revolutions per minute, at full power, of each Turbine Shaft... 1st reduction wheel... main shaft...

Rotor Shaft diameter at journals... H.P. 90... I.P. 60... L.P. ... Pitch Circle Diameter... 1st pinion 103.04... 1st reduction wheel 686.96... Width of Face... 1st reduction wheel 260... main wheel...

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings... 1st pinion 180... 1st reduction wheel... 2nd pinion... main wheel 192.5...

Flexible Pinion Shafts, diameter... 1st 42... 2nd... REDUCED TO 40 DIA ADJACENT TO CLAW COUPLING... Pinion Shafts, diameter at bearings... External 1st 90... 2nd... diameter at bottom of pinion teeth... 1st 96.47... 2nd...

Wheel Shafts, diameter at bearings... 1st 120... diameter at wheel shroud... 1st 690.95... Generator Shaft, diameter at bearings... 115... 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... Length of Bearing in Stern Bush next to and supporting propeller...

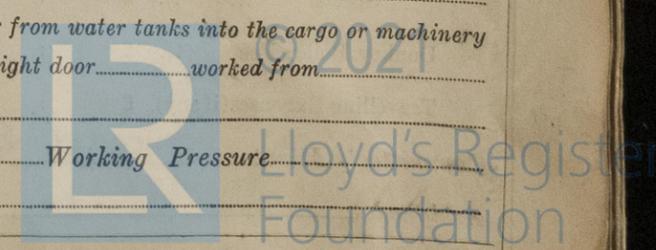
Propeller, diameter... Pitch... No. of Blades... State whether Moveable... Total Developed Surface... square feet. If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine... Can the H.P. or I.P. Turbines exhaust direct to the Condenser... No. of Turbines fitted with 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  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  Have torsional vibration characteristics of system been approved YES  Date of approval 29-3-55  
 situated aft.

**SPARE GEAR.**

Has the spare gear required by the Rules been supplied YES   
 State the principal additional spare gear supplied BEARING BUSHES FOR EACH REDUCTION GEAR & ROTOR  
 PADS & LINERS FOR THRUST BEARINGS  
 EACH TYPE OF LABYRINTH RINGS  
 BOLTS, REAMER BOLTS & NUTS FOR TURBINE CASING & COUPLINGS

The foregoing is a correct description.  
 S. Akamatsu, Director Yard-Manager, Hitachi Shipbuilding & Engr., Co., Ltd. VICE MANAGER OF HITACHI WORKS, HITACHI LTD  
 Innoshima Shipyard. Manufacturer.

Dates of Survey while building  
 During progress of work in shops - - 1955 :- FEB. 28. MAR. 3. 15. 17. 22. 25. 28. APR. 1. 5. 8. 10. 11. 15. 19. 21. 25. 30. MAY. 6. 10. 12. 16. 18. 20. 24. 27. JUN. 2. 9. 11. 16. 18. 23. 25. 28. JUL. 5. 12. 22. 26. 28. AUG. 6. 13. 18. SEP. 17. 20. 23. 29. OCT. 28. 31. NOV. 1. 9. 11. 28. DEC. 2  
 During erection on board vessel - - - - -  
 Total No. of visits 56

Dates of Examination of principal parts - Casings AU-118 26-7-55 25-6-55 5-7-55 13-8-55  
 AU-119 28-7-55 Rotors 25-6-55 Blading 12-7-55 Gearing 11-6-55  
 Wheel shaft 30-4-55 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 Ni Cr Mo STL. AU-118 L. 56.2 T. 55.2 R. 54.4 T/□" Identification Mark Y 6491  
 AU-119 L. 51.8 T. 55.6 R. 51.8 T/□" Identification Mark Y 6615  
 Flexible Pinion Shaft, Material and tensile strength Ni Cr Mo STL. L. 52.6 T. 51.2 T/□" Identification Mark Y 6526-A  
 L. 45.3 T. 45.1 T/□" Identification Mark Y 6526-B  
 Pinion shaft, Material and tensile strength Ni Cr Mo STL. L. 45.1 T. 45.5 T/□" Identification Mark Y 6640  
 Y 6763  
 ; Chemical analysis C 0.28 Si 0.28 Mn 0.46 P 0.02 S 0.008 Ni 1.05 Cr 1.01 Mo 0.34  
 C 0.28 Si 0.28 Mn 0.46 P 0.02 S 0.008 Ni 1.05 Cr 1.01 Mo 0.34

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment 29-3-55  
 Identification Mark  
 1st Reduction Wheel Shaft, Material and tensile strength Y 6499-A  
 Wheel shaft, Material ELEC. FURNACE CARBON STEEL Identification Mark Y 6499-B 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 NO If so, state name of vessel

General Remarks. (State quality of workmanship, opinions as to class, &c.) These turbines have been constructed under the supervision of the Society's Surveyors in accordance with the Society's Rules and the Approved Plans. The workmanship and materials have been found satisfactory. The turbines were examined during and after half load shop trials and found in good order. It is submitted that these engines are eligible for classification with this Society with the notation of + LMC when satisfactorily installed, in the vessel. On completion these machines were installed in the ship in accordance with the Rules and tried under full working conditions with satisfactory results.

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

JAN 14 1956 (YKA)  
 The amount of Entry Fee £84,000 - : When applied for.  
 Special ... £ : : 19  
 Donkey Boiler Fee ... £ : : When received.  
 Travelling Expenses (if any) £ : : 19

*[Signature]*  
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUESDAY 12 JUN 1956  
 Assigned See Rep. 4a.

