

Rpt. 4a.

Report on Steam Turbine Machinery.

GENERATOR

1831 YKA
No. 3525 K O B E

Date of writing Report 19 When handed in at Local Office 19 Port of YOKOHAMA Received at London Office 14 MAY 1956
No. in Survey held at HITACHI, INNOASHIMA, JAPAN Date, First Survey 28TH FEB. 1955 Last Survey 23rd FEB 1956
Reg. Book on the Steel Single Screw Steamer "ALEXANDRA I" (Number of Visits 56)
Built at INNOASHIMA, JAPAN By whom built HITACHI SHIPBUILDING & ENGINEERING CO., LTD. Tons (Gross 20,926.20 Net 13,523.53)
Engines made at HITACHI, IBARAGI By whom made HITACHI WORKS, HITACHI LTD. Yard No. 3752 When built 2 Mo. 1956
Boilers made at HITACHI, IBARAGI By whom made HITACHI WORKS, HITACHI LTD. Engine No. AU-118 When made 2 Mo. 1956
Shaft Horse Power at Full Power 700 X 2 Owners LIBERIAN TRANSOCEAN NAVIGATION CORPORATION Boiler No. 155450-1 When made 10 Mo. 1955
Nom. Horse Power as per Rule 140 X 2 Is Refrigerating Machinery fitted for cargo purposes No Port belonging to MON ROYIA
Trade for which Vessel is intended OCEAN GOING Is Electric Light fitted YES

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

No. of Turbines 1 Direct coupled, single reduction geared to 650 KVA GENERATOR 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 1,500 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.

H.P.

I.P.

L.P.

ASTERN.

Impulse Blading { No. of rows 6
Reaction Blading { No. of stages
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 10,000 main shaft 1,500

Rotor Shaft diameter at journals H.P. 90 mm I.P. 103.04 mm L.P. 60 mm
Pitch Circle Diameter 1st pinion 103.04 mm 1st reduction wheel 686.96 mm 2nd pinion main wheel
Width of Face 1st reduction wheel 260 mm main wheel

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

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

Wheel Shafts, diameter at bearings 1st 120 mm diameter at wheel shroud 1st 690.95 mm Generator Shaft, diameter at bearings 115 mm
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 } shaft fitted with a continuous liner { screw }

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? }
{ 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 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.
Innoshima Shipyard. VICE MANAGER OF HITACHI WORKS. HITACHI LTD
Manufacturer.

Dates of Survey while building 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
During progress of work in shops - - 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 - - M.R. :- 1955 Dec. 19
S.C. :- 1956 Jan. 16
Y.H. :- 1956 Feb. 21. 23
Total No. of visits 56

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

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
E.L.E. FURNACE Identification Mark Y 6499-B Thrust shaft, Material Identification Mark
Wheel shaft, Material CARBON STEEL Identification Marks Tube shaft, Material Identification Marks
Intermediate shafts, Material Identification Marks Steam Pipes, Material Test pressure
Screw shaft, Material Identification Marks
Is an installation fitted for burning oil fuel.

Date of test
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.

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

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



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Foundation