

Report on Steam Turbine Machinery.

No. 13621
10 NOV 1951

pt. 4a.

Date of writing Report 12 October 1951 When handed in at Local Office 19 Port of Copenhagen
 No. in Survey held at Copenhagen & Elsinore Date, First Survey 7 February Last Survey 21 September 1951
 Reg. Book 40085 on the Steel S. TH. ADLER SVANHOLM (Number of Visits 4)
 Built at Elsinore By whom built Th. Helsing's Skibsværktøjsfabrik Yard No. 304 When built 1951
 Engines made at Elsinore By whom made Th. Helsing's Skibsværktøjsfabrik Engine No. 446 When made 1951
 Boilers made at Elsinore By whom made Th. Helsing's Skibsværktøjsfabrik Boiler No. 1121-1122 When made 1951
 Shaft Horse Power at Full Power 350 Owners Th. Helsing's Skibsværktøjsfabrik Port belonging to Copenhagen
 Nom. Horse Power as per Rule 366 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted ye
 Trade for which Vessel is intended Open sea service

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

Exhaust steam turbine ✓
 No. of Turbines One Direct coupled, single reduction geared to 1 propelling shafts. No. of primary pinions to each set of reduction gearing 1
 direct coupled to Alternating Current Generator phase 3 periods per second 50 rated ✓ Kilowatts ✓ Volts at ✓ 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.
No. of rows <u>✓</u>	<u>✓</u>	<u>✓</u>	<u>2</u>	<u>✓</u>
No. of stages <u>✓</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>
No. of rows in each stage <u>✓</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>

Shaft Horse Power at each turbine { H.P. ✓ I.P. ✓ L.P. 350 }
 Revolutions per minute, at full power, of each Turbine Shaft { H.P. ✓ I.P. ✓ L.P. 4000 }
 1st reduction wheel 365
 main shaft ✓

Rotor Shaft diameter at journals { H.P. ✓ I.P. ✓ L.P. 75 1/2 }
 Pitch Circle Diameter { 1st pinion 97.25 1/4 1st reduction wheel 1062.75 2nd pinion ✓ main wheel ✓ }
 Width of Face { 1st reduction wheel 2 x 125 1/4 main wheel ✓ }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 204 1/4 1st reduction wheel 198 3/4 2nd pinion ✓ main wheel ✓ }

Pinion Shafts, diameter at bearings { External 80 1/4 Internal ✓ }
 diameter at bottom of pinion teeth { 1st 89.79 3/4 2nd ✓ }

Wheel Shafts, diameter at bearings { 1st 130 1/4 2nd ✓ }
 diameter at wheel shroud { 1st 180.78-165 1/2 2nd ✓ }

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 ✓ }

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 Bades ✓ State whether Moveable ✓ Total Developed Surface ✓ square feet ✓

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 ✓
 In Pump Room ✓

Holds, &c. ✓ Main Water Circulating Pump Direct Bilge Suctions, No. and size ✓ Independent Power Pump Direct Suctions to the Engine Room ✓
 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 ✓
 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 ✓
 Working 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 ✓
 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 ✓
 Forced Draft fitted ✓ No. and Description of Boilers ✓
 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 Date of approval
situated aft.

SPARE GEAR.

Has the spare gear required by the Rules been supplied?
State the principal additional spare gear supplied

AKTIESELSKABET ATLAS
f. Turbineafdelingen
E. Holtenmager

The foregoing is a correct description,

Dates of Survey while building During progress of work in shops - - 1951: 7/2 - 19/2 - 10/4 - 16/4 - 21/4 - 9/5
During erection on board vessel - - 1951 25/8 - 27/8 - 4/9 - 6/9 - 14/9 - 18/9 - 21/9 - 22/9
Total No. of visits 14
Dates of Examination of principal parts - Casings 7/2 - 19/2 - 21/4 - 9/5 Rotors 7/2 - 19/2 - 21/4 - 9/5 Blading 16/4 - 9/5 Gearing 19/2 - 16/4 - 9/5
Wheel shaft 19/2 - 9/5 Thrust shaft Intermediate shafts Tube shaft Screw shaft
Propeller Stern tube Engine and boiler seatings 6/9 Engine holding down bolts 18/9 - 21/9
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 and Rotor shaft, Material and tensile strength Chromium-Nickel-Molybdenum steel 89.6 kg/cm² Identification Mark 22040'S 202
1st Reduction gear wheel runs Pinion shaft, Material and tensile strength Siemens-Martin high tensile steel 76.1 kg/cm² Identification Mark 22040'S 501
Flexible Pinion Shaft, Material and tensile strength - - - - - 88.3 kg/cm² Identification Mark 22040'S 206
Pinion shaft, Material and tensile strength - - - - - - - - - Identification Mark 22040'S 205

If Pinion Shafts are made of special steel state date of approval of chemical analysis, physical properties and heat treatment
1st Reduction Wheel Shaft, Material and tensile strength Siemens-Martin high tensile steel 87.4 kg/cm² Identification Mark 22040'S 205
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 No If so, state name of vessel

General Remarks. (State quality of workmanship, opinions as to class, &c.) The exhaust steam turbine has been built and installed on board under special survey in accordance with the Rules and approved plans and the Secretary's Letter Eng. dated 10/5.1951.
The material has been tested as required by the Rules as per certificates produced and the workmanship is good.
On the trial trip the exhaust turbine was tested under full power and found satisfactory

Recommend the notation of "L.P. turbine with S.R. gearing and chain drive" to be made in the Register Book

The amount of Entry Fee ... £ : When applied for.
Special ... £ 4.70 : 9/11 1951
Donkey Boiler Fee ... £ : When received.
Travelling Expenses (if any) £ 10.00 :
Committee's Minute
Assigned See F.E. mch. rpt.

Enginner Surveyor to Lloyd's Register of Shipping.
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