

Report on Steam Turbine Machinery. No. 12356

4 JAN 1960

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Survey held at Stockholm Date, First Survey 17.10.57 Last Survey 20.11. 1959.
(Number of Visits 25)

on the Single Twin Triple Quadruple Screw Vessel Tons (Gross) (Net)
at Rijeka By whom built Brodogradiliste, 3 Maj Yard No. 460 When built
nes made at Stockholm By whom made A/B de Laval's Ångturbin Engine No. 45053 When made 1959
rs made at By whom made Boiler No. When made
t Horse Power Maximum 13750 Owners Port belonging to
as per Rule Service 12500 2750 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted Yes
le for which Vessel is intended

STEAM TURBINE ENGINES, &c.—Description of Engines Impulse Turbines for Main Propelling Machinery
of Turbines Ahead 2 HP & LP Direct coupled, single reduction geared to 1 propelling shafts. No. of primary pinions to each set of reduction gearing 2
Astern 1 LP double reduction geared
ect coupled to Alternating Current Generator phase periods per second rated Kilowatts Volts at revolutions per minute;
supplying power for driving Propelling Motors, Type Direct coupled, single or double reduction geared to propelling shafts.
ed Kilowatts Volts at revolutions per minute

TURBINE	H. P.	I. P.	L. P.	ASTERN.
LOADING.				
No. of rows	9		8	3
No. of stages				
No. of rows in each stage				
Shaft Horse Power at each turbine	H.P. 6875 I.P. 6875 L.P. 6875	Revolutions per minute, at full power, of each Turbine Shaft HP = 279.567 mm. HP=1815.215 mm.	H.P. 4664 I.P. 112 L.P. 3575	1st reduction wheel 718.3 main shaft 112 HP & LP 560 mm.
Motor Shaft diameter at journals	H.P. 149.75 mm. I.P. 149.75 mm. L.P. 149.75 mm.	Pitch Circle Diameter 1st pinion LP = 350.443 mm. 2nd pinion 522.628 mm. HP & LP mm.	1st reduction wheel LP=1744.338 mm. main wheel 3351.854 mm.	Width of Face 1st reduction wheel 1045 mm. main wheel 405 mm.
Distance between centres of pinion and wheel faces and the centre of the adjacent bearings		1st pinion 382.5 mm. 2nd pinion 712.5 mm.	1st reduction wheel 792.5 mm. main wheel 792.5 mm.	
INTERMEDIATE	HP & LP 1st O.D.=200 mm. ID = 120 mm. 2nd 295 mm.	HP & External 1st 199.6 mm. 2nd 449.4 mm. LP Internal 1st 325 mm. 2nd 300 mm.	Pinion Shafts, diameter at bearings 1st 274.6 mm. diameter at wheel shroud, Reduced to 530 mm. main 574.6 mm. as per rule at coupling as fitted	HP 1st 269.767 mm. LP 2nd 340.643 mm.
Wheel Shafts, diameter at bearings			Generator Shaft, diameter at bearings	
Intermediate Shafts, diameter			Propelling Motor Shaft, diameter at bearings	
Tube Shaft, diameter			Thrust Shaft, diameter at collars	
Bronze Liners, thickness in way of bushes			Is the tube screw shaft fitted with a continuous liner	
Propeller boss			Is the after end of the liner made watertight in the	
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				
Two liners are fitted, is the shaft lapped or protected between the liners				
Length of Bearing in Stern Bush next to and supporting propeller				
Propeller, diameter				
Pitch				
No. of Blades				
State whether Moveable				
Total Developed Surface				
Can the H.P. or I.P. Turbines exhaust direct to the				

Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Yes Can the H.P. or I.P. Turbines exhaust direct to the
Condenser No No. of Turbines fitted with astern wheels 1 (LP) 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 Branch Bilge Suctions, No. and size: In Engine In Pump Room
In Boiler Rooms
In Holds, &c.
Main Water Circulating Pump Direct Bilge Suctions, No. and size Direct Bilge Suctions to the Engine and/or Boiler 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 they fitted with Valves or Cocks
Are all Sea Connections fitted direct on the skin of the ship Are the Overboard Discharges above or below the deep water
Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Blow Off Cocks fitted with a spigot and brass
Are they each fitted with a Discharge Valve always accessible on the plating of the vessel How are they protected
Covering plate 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
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
Is the Shaft Tunnel watertight Is it fitted with a watertight door worked from

BOILERS, &c.—Total Heating Surface of Boilers
Is Forced Draught fitted No. and Description of Boilers Working Pressure
Is a Report on Main Boilers now forwarded?

Is ☒ a Donkey ☐ an Auxiliary 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. ☒ Turbines ☐ Main Boilers ☐ Auxiliary Boilers ☐ Donkey Boilers ☐
(If not, state date of approval) Gearing ☐
Superheaters. ☐ General Pumping Arrangements. ☐ Oil Fuel Burning Arrangements. ☐
Geared turbines situated aft. ☐ Have torsional vibration characteristics of system been approved. Yes ☒ Date of approval 19th June 1958
SPARE GEAR. "For a service speed of 112 RPM"

Has the spare gear required by the Rules been supplied. ☐

State the principal additional spare gear supplied. ☐

The foregoing is a correct description.

TURBIN AB DE LAVAL LJUNGSTRÖM
Technical Section

Berkel Jang

Manufact

Dates of Survey while building	During progress of work in shops - -	17.10.57 T.	20.11.59.
	During erection on board vessel - -	-	-
	Total No. of visits	25	-
Dates of Examination of principal parts	Casings	HP 20/26.9.58. 1.10.58. LP 10/15/23.1.59.	HP 25.10.57 LP 8.4.58 11.10.58
	Rotors	LP 8.4.58	Blading LP 6.3.59.
	Gearing	23.1.59/12	16/17.12.58
Wheel shaft	17.3.58.	Thrust shaft	2.3.59.
Intermediate shafts	-	27.11.58	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	24.9.
Main boiler safety valves adjusted	-	Thickness of adjusting washers	-
Rotor shaft, Material and tensile strength	Electro Steel HP and LP 66.3 - 66.9 kg/mm ²	Identification Mark	HP= 1449 SKM WL LP= 5582 SKM WAC
Intermediate	-	-	HP= 1864 SKM KE LP= 1581 GOT WAC
Flexible Pinion Shaft, Material and tensile strength	Electro Steel 64.3 - 69.5 kg/mm ²	Identification Mark	HP= 1865/1582 GOT LP= 1st 4771 GOT
Pinion shaft, Material and tensile strength	Electro Steel HP & LP 1st Red. 83.8-90.3, 2nd Red 82.5-87.7 kg/mm ²	Identification Mark	HP= 1st 4774 GOT LP= 1st 4774 GOT
HP 2nd 1526 GOT AR 16.12.58	-	-	-
LP 2nd 1524 GOT AR 16.12.58	-	-	-
Chemical analysis	-	-	-

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment 20th Nov. 1957.
1st Reduction Wheel Shaft, Material and tensile strength Electro Steel 67.0 - 69.2 kg/mm² Identification Mark HP= 1496 GOT WAC LP= 2071 GOT WAC
Wheel shaft, Material Electro Steel Identification Mark 17.3.58. Thrust shaft, Material Electro Steel Identification Mark 2.3.59.
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. ☐
Full description of Fire Extinguishing Apparatus fitted in machinery spaces. ☐
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 Brodogradiliste Yard 459

General Remarks. (State quality of workmanship, opinions as to class, &c.) This machinery has been built under Special Survey and accordance with the approved plans, Secretary's letters and the Requirements of the Rules so far as applicable. The materials used in the construction have been tested and approved by the Society's Surveyors and the certificates are forwarded with this report. The completely assembled machinery has been tried under steam, when coupled to a water brake absorbing 3000 HP, at the Engine Builders Works. The governor, emergency overspeed governor, hand and automatic steam shut off arrangements in connection with the lubricating oil system functioned satisfactorily when tried under working conditions. On completion of the shop trials the surface of all journals and bearings and the bedding in of gears were examined and approved. Wear down and alignment gauges adjusted and marked accordingly. This machinery is eligible in our opinion to have the notation of +LMC (with date) when securely fitted onboard the vessel under the supervision and to the satisfaction of the Society's Surveyors and to the bedding in of the reduction gearing being again examined after full power sea trials.

The amount of Entry Fee ... £r. 3.380:--: When applied for 3/12 1958
Special ... £ : :
Donkey Boiler Fee ... £ : : When received
Travelling Expenses (if any) £r. 80:--: 19

Committee's Minute

Assigned

See Rha 1093

FRIDAY 14 APR 1967

Engine Surveyor to Lloyd's Register of Shipping.



Lloyd's Register
Foundation