

# REPORT ON STEAM TURBINE MACHINERY.

Received at London Office 27 JUN 1930

Date of writing Report 22nd June 1930 When handed in at Local Office Bremen Port of Bremen  
 No. in Survey held at Bremen Date, First Survey 17th Jan. Last Survey 20th June 1930  
 Reg. Book. 17959 on the STEEL SCOR "CLAY MACKENZIE" (Number of Visits 15)  
 Tons { Gross 6544  
 Net 4142  
 Built at Newcastle By whom built Wm. Beard & Co. Ltd. Yard No. 273 When built 1917-6/10  
 Engines made at Birmingham By whom made Wm. Beard & Co. Ltd. Turbine No. 273 When made 1930  
 Boilers made at Wm. Beard & Co. Ltd. By whom made Wm. Beard & Co. Ltd. Boiler No. 273 When made 1930  
 Shaft Horse Power at Full Power 3122 Owners The Clan Line Steamers, Ltd. Port belonging to Glasgow  
 Nom. Horse Power as per Rule 610 Is Refrigerating Machinery fitted for cargo purposes  Is Electric Light fitted

**EXHAUST**  
 STEAM TURBINE ENGINES, &c.—Description of Engines Bauer-Wach System No. of Turbines 3 Ahead 2 Aft 1  
 Direct coupled, single or double reduction geared to 1 propelling shaft. No. of primary pinions to each set of reduction gearing 1, direct coupled to 1 phase  
 periods per second, Alternating Current Generator rated  Kilowatts  Volts at  revolutions per minute; for supplying power for driving  
 Propelling Motors. Propelling Motors, Type   
 rated  Kilowatts  Volts at  revolutions per minute. Direct coupled, single or double reduction geared to  propelling shafts.

## PARTICULARS OF TURBINE BLADING.

	H.P.			I.P.			L.P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION							88	838	1			
2ND							104	854	1			
3RD							120	870	1			
4TH							136	886	1			
5TH							153	903	1			
6TH							176	926	1			
7TH							200	950	1			
8TH												

Shaft Horse Power at each turbine 1030 Revolutions per minute, at full power, of each Turbine Shaft 3500 1st reduction wheel 450/424  
 main shaft 76.5 Pitch Circle Diameter, 1st pinion 202.52 mm 2nd pinion 279.76 mm 1st reduction wheel 1620.19 mm main wheel 2105.78 mm  
 Width of Face, 1st reduction wheel 280 mm main wheel 580 mm Distance between centres of pinion and wheel faces and the centre of the adjacent bearings,  
 1st pinion 295.255 mm 2nd pinion 440 mm 1st reduction wheel 550 mm main wheel 550 mm Flexible Pinion Shafts, diameter 1st 150 mm 2nd 350 mm  
 Pinion Shafts, diameter at bearings External 1st 150 mm 2nd 350 mm diameter at bottom of teeth of pinion 1st 191.52 mm 2nd 363.21 mm  
 Internal 1st 280 mm  
 Wheel Shafts, diameter at bearings, 1st 250-260 mm main 500 mm diameter at wheel shroud, 1st 3550 mm main 2015 mm  
 Generator Shafts, diameter at bearings  Propelling Motor Shafts, diameter at bearings   
 Main Shafting, diameter of Tunnel Shafting as per rule 384.17 mm diameter of Thrust Shafting as per rule 358 mm  
 diameter of Screw Shaft as fitted 425.44 mm Is the screw shaft fitted with a continuous liner the whole length of the stern tube Y/N Is the after end of the liner  
 made watertight in the propeller boss Y/N If the liner is in more than one length are the joints burned  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 appliance fitted at the after end of the shaft to permit of it being efficiently  
 lubricated NO Length of Stern Bush  Diameter of Propeller 5640 mm  
 Pitch of Propeller  No. of Blades  State whether Moveable  Total Surface  square feet. If Single Screw, are  
 arrangements made so that steam can be led direct to the L.P. Turbine, and either the H.P. or I.P. Turbine can exhaust direct to the Condenser   
 No. of Turbines fitted with astern wheels  Total number of power driven Main and Auxiliary Pumps   
 No. and size of Feed Pumps  How driven  No. and size of Pumps connected to the Main Bilge Line   
 How driven  No. and size of Ballast Pumps  No. and size of Lubricating Oil Pumps, including  
 Spare Pump 2 Are two independent means arranged for circulating water through the Oil Cooler Y/N No. and size of suction  
 connected to both Main Bilge Pumps and Auxiliary Bilge Pumps; In Engine and Boiler Room  and in Holds, &c.  
 No. and size of Main Water Circulating Pump Bilge Suctions  No. and size of Donkey Pump Direct Suctions  
 to the Engine Room Bilges  Are all the bilge suction pipes in holds and tunnel well fitted with strum-bores  
 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 connections with the sea direct on the skin of the ship  Are they Valves or Cocks  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates  Are the Discharge Pipes 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 are carried through the bunkers  How are they protected  
 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 Screw Shaft Tunnel watertight  Is it fitted with a watertight door

OILERS, &c.—(Letter for record) Total Heating Surface of Boilers                      Working Pressure                       
 Is Forced Draft fitted                      No. and Description of Boilers                       
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 W515-0025

Is a Report on Main Boilers now forwarded?

Is a Donkey Boiler fitted?

If so, is a report now forwarded?

Plans. Are approved plans forwarded herewith for Shafting 30/1/30 Main Boilers  Auxiliary Boilers  Donkey Boilers   
(If not state date of approval)

Spare Gear. State the articles supplied:—

*As required by the Rules.*

The foregoing is a correct description,

**Deutsche Schiff- und Maschinenbau Aktiengesellschaft**

Manufacturers.

*Wabach & Kabelaer*

Dates of Survey while building: During progress of work in shops -- 1930:— Jan. 17, March 11, 14, 19, 31, April 3, 26, May 1, 8, 14.  
During erection on board vessel --- June 3, 10, 16, 19, 25  
Total No. of visits 15.

Dates of Examination of principal parts: Casings 14/3, 1/5 Rotors 11/3 Blading 19/3 Gearing 19/3  
Wheel shaft 26/4 Thrust shaft 26/4 Pinion 11/3 Screw shaft 16/6 Propeller 16/6  
Stern tube  Turbine Engine and boiler seatings 10/6 Turbine Engines holding down bolts 10/6  
Completion of pumping arrangements  Boilers fixed  Turbine Engines tried under steam 20/6/30  
Main boiler safety valves adjusted  Thickness of adjusting washers   
Material and tensile strength of Rotor shaft *J. M. Steel 36.3 ton per sq. inch* Identification Mark on Do. LLOYD'S 3735  
Material and tensile strength of ~~Flexible~~ Pinion Shaft -4- 49.1 " " " " Identification Mark on Do. -4- 2990  
Material and tensile strength of Pinion shaft -4- 46.8 " " " " Identification Mark on Do. -4- 109  
Material and tensile strength of 1st Reduction Wheel Shaft -4- 36.3 " " " " Identification Mark on Do. -4- 3140  
Material of Wheel shaft *J. M. Steel* Identification Mark on Do. LLOYD'S 7027 Material of Thrust shaft *J. M. Steel* Identification Mark on Do. LLOYD'S 306  
Material of Tunnel shafts *Spitz coupling* -4- Identification Marks on Do. LLOYD'S 7026 Material of Screw shafts *J. M. Steel* Identification Marks on Do. LLOYD'S 2985  
Material of Steam Pipes *Spitz coupling wheel rim* *J. M. Steel* LLOYD'S 2970 Test pressure *8.1 ton / cm<sup>2</sup>* Date of test *8/5/30.*

Is an installation fitted for burning oil fuel *No* Is the flash point of the oil to be used over 150°F.

Have the requirements of the Rules for carrying and burning oil fuel 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, etc.) *This Kanon-Wach-Gehaue Turbine has been constructed under Special Survey in accordance with the approved plans, the Secretary's letter and in all other respects in conformity with the Society's Rules. The materials used in the construction and the workmanship are good. The Turbine has been examined under working conditions on board in combination with the existing steam reciprocating engine and was found to work satisfactorily. (Please see Rpt. H attached.)*

The amount of Entry Fee ... £ *See Rpt. 9 attached.* When applied for, 19...  
Special ... £ ... 19...  
Donkey Boiler Fee ... £ ...  
Travelling Expenses (if any) £ ... 19...

*G. H. S. Adams*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 8 JUL 1930

Assigned

*See Rpt 8 (Pmn 1275) attached*



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