

REPORT ON STEAM TURBINE MACHINERY. No. 20943.

Received at London Office.

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Date of writing Report 10th APRIL 1940. When handed in at Local Office 15th April 1940. Port of GREENOCK

No. in Survey held at GREENOCK Date, First Survey 14th APRIL 1940. Last Survey 12-4-40 19

Reg. Book. 2917-54 on the TWIN SC TURBINE "LANARKSHIRE" (Number of Visits 103.)

Tons } Gross 9816
Net 5822

Built at GREENOCK By whom built GREENOCK DRY DO Yard No. 437 When built 1940

Engines made at NEWCASTLE ON TYNE By whom made PARSONS MARINE STEAM TURBINE Engine No. 328 When made 1939

Boilers made at PENFREW By whom made BARBOCK & WILCOX L^{td} Boiler No. 6/1344 When made 1939

Shaft Horse Power at Full Power 9200 Owners CLAN LINE STEAMERS L^{td} Port belonging to GLASGOW

Nom. Horse Power as per Rule 1549 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

Trade for which Vessel is intended OCEAN GOING

TEAM TURBINE ENGINES, &c.—Description of Engines

No. of Turbines Ahead Direct coupled, single reduction geared } to propelling shafts. No. of primary pinions to each set of reduction gearing.

Astern Direct coupled, double reduction geared }

direct coupled to Alternating Current Generator phase periods per second } 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.		
	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												
2ND												
3RD												
4TH												
5TH												
6TH												
7TH												
8TH												
9TH												
10TH												
11TH												
12TH												

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

Rotor Shaft diameter at journals { H.P. I.P. L.P. } Pitch Circle Diameter { 1st pinion 2nd pinion } 1st reduction wheel main wheel Width of Face { 1st reduction wheel main wheel }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 2nd pinion } 1st reduction wheel main wheel

Flexible Pinion Shafts, diameter { 1st 2nd } Pinion Shafts, diameter at bearings External Internal { 1st 2nd } diameter at bottom of pinion teeth { 1st 2nd }

Wheel Shafts, diameter at bearings { 1st main } diameter at wheel shroud, { 1st main } Generator Shaft, diameter at bearings Propelling Motor Shaft, diameter at bearings

Intermediate Shafts, diameter as per rule 13.64 as fitted 14" Thrust Shaft, diameter at collars as per rule 14.322 as fitted 14.875 Tube Shaft, diameter as per rule as fitted

Screw Shaft, diameter as per rule 14.973 as fitted 16" Is the screw shaft fitted with a continuous liner Yes Bronze Liners, thickness in way of bushes as per rule .757 as fitted .875

Thickness between bushes as per rule .568 as fitted 2/32 Is the after end of the liner made watertight in the propeller boss Yes 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 No Length of Bearing in Stern Bush next to and supporting propeller 5'-4" square feet.

Propeller, diameter 16'-0" Pitch 15'-11" No. of Blades 4 State whether Moveable Yes Total Developed Surface 88 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. Turbine exhaust direct to the

Condenser No. of Turbines fitted with astern wheels 4 Feed Pumps No. and size Two Main 16 1/2 x 12 1/2 x 24 One Aux 14 x 10 1/2 x 24

Pumps connected to the Main Bilge Line No. and size Five 2-7 1/2 x 9 x 15 1-10 1/2 x 12 1/2 x 21 1-9 1/2 x 11 x 18 1 @ 30 tons/hr How driven Steam Steam Steam El. Motor

Ballast Pumps, No. and size b.m. 10 1/2 x 12 1/2 x 25 200 l/min Lubricating Oil Pumps, including Spare Pump, No. and size 3 at 8 x 7 x 18

Are two independent means arranged for circulating water through the Oil Cooler Yes Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge

Pumps, No. and size:—In Engine and Boiler Room 4 @ 3 1/2" 1 @ 2" In Holds, &c. N° 1 - 2 @ 3" N° 2 - 2 @ 3 1/2" N° 3 - 2 @ 3" Duct Keel 1 @ 3"

Main Water Circulating Pump Direct Bilge Suctions, No. and size 2 - 14" Independent Power Pump Direct Suctions to the Engine Room

Bilges, No. and size 1 - 5 1/2 Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes

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 Yes

Are all Sea Connections fitted direct on the skin of the ship Yes Are they fitted with Valves or Cocks Yes

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Yes Are the Overboard Discharges above or below the deep water line Both

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 Yes

What pipes pass through the bunkers None 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 Yes

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 Yes Is the Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper Deck

BOILERS, &c.—(Letter for record *S* ^{WT}) Total Heating Surface of Boilers *14790 sq ft*
Is Forced Draft fitted *Yes* No. and Description of Boilers *3 Babcock & Wilcox type* Working Pressure *250 lbs*
Is a Report on Main Boilers now forwarded? *Yes*
Is *a Donkey* Boiler fitted? *No* If so, is a report now forwarded? *Yes*
an Auxiliary Plans. Are approved plans forwarded herewith for Shafting *Yes* Main Boilers *See Glasgow 41* Auxiliary Boilers *✓* Donkey Boilers *✓*
(If not state date of approval) Superheaters *See Glasgow 41* General Pumping Arrangements *29-11-38* Oil Fuel Burning Arrangements *Yes*
Spare Gear. State the articles supplied:—

See attached list

The foregoing is a correct description,

For JOHN G. KINCAID & CO. LIMITED.

McCart Director, Manufacturer.

Dates of Survey while building { During progress of work in shops -- (1939) Apr. 14-25-26 May 2-4-8-9-10-17-29-31 June 1-2-5-9-15 July 26-27 Aug. 1-3-4-18-25-28-29-31 Sept. 1-6-15-26-28 Oct. 4-6-10-13-18 Nov. 2-3-6-9-10-20-21 Dec. 2-9-12-13-14-21-22-26-27 (1940) Jan. 3-5-8-9-10-11-12-15-16-19-24-25-30-31 Feb. 1-2-5-6-8-9-13-15-19-20-22-23-26-27-28 Mar. 1-4-9-11-14-15-18-20-21-26-27-28-29 Apr. 1-2-3-4-5-8-9-10-11-12-15-16-19-20-22-23-26-27-28 May 1-2-3-4-5-8-9-10-11-12-15-16-19-20-22-23-26-27-28 June 1-2-3-4-5-8-9-10-11-12-15-16-19-20-22-23-26-27-28 July 1-2-3-4-5-8-9-10-11-12-15-16-19-20-22-23-26-27-28 Aug. 1-2-3-4-5-8-9-10-11-12-15-16-19-20-22-23-26-27-28 Sept. 1-2-3-4-5-8-9-10-11-12-15-16-19-20-22-23-26-27-28 Oct. 1-2-3-4-5-8-9-10-11-12-15-16-19-20-22-23-26-27-28 Nov. 1-2-3-4-5-8-9-10-11-12-15-16-19-20-22-23-26-27-28 Dec. 1-2-3-4-5-8-9-10-11-12-15-16-19-20-22-23-26-27-28
Total No. of visits *103*

Dates of Examination of principal parts—Casings Rotors Blading Gearing
Wheel shaft Thrust shaft *6-11-39* Intermediate shafts *6-11-39* Tube shaft *✓* Screw shaft *6-11-39*
Propeller *6-11-39* Stern tube *2-11-39* Engine and boiler seatings *12-12-39* Engine holding down bolts *19-1-40*
Completion of pumping arrangements *4-4-40* Boilers fixed *19-1-40* Engines tried under steam *4-5-40*
Main boiler safety valves adjusted *20-1-40* Thickness of adjusting washers *15" 33" 35" 37" 39" 41" 43" 45" 47" 49" 51" 53" 55" 57" 59" 61" 63" 65" 67" 69" 71" 73" 75" 77" 79" 81" 83" 85" 87" 89" 91" 93" 95" 97" 99" 101" 103" 105" 107" 109" 111" 113" 115" 117" 119" 121" 123" 125" 127" 129" 131" 133" 135" 137" 139" 141" 143" 145" 147" 149" 151" 153" 155" 157" 159" 161" 163" 165" 167" 169" 171" 173" 175" 177" 179" 181" 183" 185" 187" 189" 191" 193" 195" 197" 199" 201" 203" 205" 207" 209" 211" 213" 215" 217" 219" 221" 223" 225" 227" 229" 231" 233" 235" 237" 239" 241" 243" 245" 247" 249" 251" 253" 255" 257" 259" 261" 263" 265" 267" 269" 271" 273" 275" 277" 279" 281" 283" 285" 287" 289" 291" 293" 295" 297" 299" 301" 303" 305" 307" 309" 311" 313" 315" 317" 319" 321" 323" 325" 327" 329" 331" 333" 335" 337" 339" 341" 343" 345" 347" 349" 351" 353" 355" 357" 359" 361" 363" 365" 367" 369" 371" 373" 375" 377" 379" 381" 383" 385" 387" 389" 391" 393" 395" 397" 399" 401" 403" 405" 407" 409" 411" 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