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REPORT ON STEAM TURBINE MACHINERY.

No. 103740
JUN 1946

Received at London Office

Date of writing Report 16-5-46 When handed in at Local Office 3-6-46 Port of NEWCASTLE-ON-TYNE
 No. in Survey held at NEWCASTLE-ON-TYNE Date, First Survey (1943) June 29 Last Survey May 9th 1946
 Reg. Book. S/S "BEAVERLAKE" (Number of Visits 76)
 Gross Tons 9834
 Net Tons 5818
 Built at PORT GLASGOW By whom built LITHGOWS LTD. Yard No. 1003 When built 1946
 Engines made at NEWCASTLE-ON-TYNE By whom made C.A. PARSONS & CO. LTD. Engine No. 2620-3 When made 1946
 Boilers made at ✓ By whom made ✓ Boiler No. ✓ When made ✓
 Shaft Horse Power at Full Power 9000 Owners CANADIAN PACIFIC S.S. CO. LTD. Port belonging to London
 Nom. Horse Power as per Rule 1610 Is Refrigerating Machinery fitted for cargo purposes YES Is Electric Light fitted YES
 Trade for which Vessel is intended Based on boiler heating surface only

STEAM TURBINE ENGINES, &c.—Description of Engines TURBO-ELECTRIC

No. of Turbines Ahead 2 Direct coupled, single reduction geared } to propelling shafts. No. of primary pinions to each set of reduction gearing.
 Astern ✓ double reduction geared }
 direct coupled to } Alternating Current Generator 3 phase 57.5 periods per second } rated 7000 Kilowatts 3000 Volts at 3450 revolutions per minute;
 for supplying power for driving ONE Propelling Motors, Type THREE PHASE SYNCHRONOUS - DOUBLE UNIT, EACH UNIT
 rated 3000 Kilowatts 108 Volts at 108 revolutions per minute. Direct coupled, single or double reduction geared to ONE propelling shaft.

TURBINE BLADING.

	H. P. IMPULSE			H. P. REACTION			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	625"	28.575"	1	74"	17.074"	6	90"	21.769"	5			
2ND "	INLET 888" OUTLET 10625"	29.375" (OUTLET)	1	80"	17.194"	6	1.00'	21.969"	4			
3RD "				86"	17.314"	5	1.15'	22.269"	4			
4TH "	Row 1. SHROUding 3/32 THICK			95"	17.494"	4	1.35'	22.669"	3			
5TH "	Row 2. " " 1/16 "			SHROUding 1/16 THICK			1.5'	23.069"	2			
6TH "							1.75'	23.469"	1			
7TH "							1.80'	23.869"	1			
8TH "							1.85'	24.269"	1			
9TH "							1.90'	24.669"	1			
10TH "							1.95'	25.069"	1			
11TH "							2.00'	25.469"	1			
12TH "							2.05'	25.869"	1			

Shaft Horse Power at each turbine { H.P. 2100 ✓
 I.P. ✓ **Revolutions per minute, at full power, of each Turbine Shaft** { H.P. 3450 ✓ 1st reduction wheel ✓
 L.P. 6900 ✓ I.P. ✓ main shaft ✓
 L.P. 3450 ✓
 Rotor Shaft diameter at journals { H.P. 5 ✓ Pitch Circle { 1st pinion ✓ 1st reduction wheel ✓ Width of { 1st reduction wheel ✓
 I.P. 6" 7" ✓ Diameter { 2nd pinion ✓ main wheel ✓ Face { main wheel ✓
 L.P. 6" 7" ✓
 Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion ✓ 1st reduction wheel ✓
 2nd pinion ✓ main wheel ✓
 Flexible Pinion Shafts, diameter { 1st ✓ Pinion Shafts, diameter at bearings External { 1st ✓ 2nd ✓ diameter at bottom of pinion teeth { 1st ✓
 2nd ✓ Internal { 1st ✓ 2nd ✓ 2nd ✓
 Wheel Shafts, diameter at bearings { 1st ✓ diameter at wheel shroud, { 1st ✓ Generator Shaft, diameter at bearings 9" ✓
 main ✓ Propelling Motor Shaft, diameter at bearings 18 1/2" ✓
 Intermediate Shafts, diameter as per rule ✓ Thrust Shaft, diameter at collars as per rule ✓
 as fitted ✓
 Tube Shaft, diameter as per rule ✓ Screw Shaft, diameter as per rule ✓ Is the { tube } shaft fitted with a continuous liner { ✓
 as fitted ✓ as fitted ✓ { screw }
 Bronze Liners, thickness in way of bushes as per rule ✓ Thickness between bushes as per rule ✓ Is the after end of the liner made watertight in the
 as fitted ✓ as fitted ✓ 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 NO Can the H.P. or I.P. Turbine exhaust direct to the
 Condenser NO ✓ No. of Turbines fitted with astern wheels NONE 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 to both 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 ✓

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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 ✓

Has the spare gear required by the Rules been supplied? YES - SPARE GEAR. AS PER APPROVED LIST (ATTACHED COPY)

State the principal additional spare gear supplied



The foregoing is a correct description, Manufacturer. STE

Dates of Survey while building: (1943) June 27, (1944) Feb. 28, Mar. 18, 25, 28, Apr. 19, 20, 28, May 4, 14, 23, June 13, 15, 19, 21, 22, 23, 26, 27, 28, 29, July 10, 11, 12, 19, 25, Aug. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, Sept. 6, 26, 28, Oct. 16, 18, Nov. 6, 8, 24 (1945) Jan. 4, 31 Feb. 10, 13, 15, 19 Mar. 1, May 4, 14 June 5, 19, 20, 22, 23, 26, 29 July 21 Aug. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 Sept. 6, 26, 28, Oct. 22, 27, 31 Nov. 7, 23, 26 Dec. 5, 11, 24, 28, (1946) Jan. 3, 14, 15, 18, 22, 29 Feb. 14, 20, Apr. 12, May 9, Total No. of visits 76

Dates of Examination of principal parts—Casings 26-11-45 ETC. Rotors 27-10-45 ETC. Blading 31-10-45 ETC. Gearing ✓

Wheel shaft ✓ Thrust shaft ✓ Intermediate shafts ✓ 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 fired ✓ Engines tried under steam ✓

Main boiler safety valves adjusted ✓ Thickness of adjusting washers ✓ HP: - 37.5 TONS/INS² Identification Mark LLOYDS 59851 J.C. 20-7

ALTERNATOR ROTOR Rotor shaft, Material and tensile strength O.H. STEEL - LP(MAIN): - 39.8 TONS/INS² - (STUB) - 37 TONS/INS² Identification Mark LLOYDS 59831 W.H. 17-4

Flexible Pinion Shaft, Material and tensile strength O.H. STEEL 35.5 TONS/INS² Identification Mark LLOYDS 59541 W.H. 24-4

MOTOR Pinion shaft, Material and tensile strength O.H. STEEL 30 TONS/INS² Identification Mark LLOYDS 13804/327 H.A.I. 12

AUX. GEN. ROTOR Pinion shaft, Material and tensile strength O.H. STEEL 31.3 TONS/INS² Identification Mark LLOYDS 59029 W.H. 31-4

Wheel shaft, Material ✓ Identification Mark ✓ Thrust shaft, Material O.H. STEEL Identification Mark LLOYDS 14124/F/15 G.H.M. 20-2-45

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 YES If so, state name of vessel BEAVERGLEN

General Remarks (State quality of workmanship, opinions as to class, &c.) This Machinery has been constructed under Special Survey in accordance with Approved Plans - Society's Rules and Secretary's Letters.

The Materials and workmanship are good.

The Machinery has been despatched to Greenock.

Forging Reports will be forwarded on completion this type Engine programme.

This turbine has been efficiently installed in the vessel & tested under full working conditions on a sea trial with satisfactory results. Please see Greenock F.E. of 12/23/46

No. for recommendations Charles J. Martin

The amount of Entry Fee ... £ : : When applied for, 6 JUN 1946

Special ... £ 56 : 2. : When received, J.S. Martin Engineer Surveyor to Lloyd's Register of Shipping.

Donkey Boiler Fee ... £ : : Travelling Expenses (if any) £ : : 19

Committee's Minute GLASGOW 12 NOV 1946

Assigned SEE ACCOMPANYING MACHINERY REPORT

NEWCASTLE-ON-TYNE

Certificate (if required) to be sent to Committee's Minute.

