

REPORT ON STEAM TURBINE MACHINERY.

No. 47659

Date of writing Report 1-3-28 When handed in at Local Office 1-3-28 Port of Glasgow Received at London Office 7 MAR 1928

No. in Survey held at Blydebank Date, First Survey 31-3-27 Last Survey 1st March 1928

Reg. Book. on the Triple Screw "Princess Elaine" (Number of Visits 75)

Built at Blydebank By whom built John Brown & Co. Ltd. Yard No. 520 When built 1928

Engines made at do By whom made do Engine No. 520 When made 1928

Boilers made at do By whom made do Boiler No. 520 When made 1928

Shaft Horse Power at Full Power 4600 Owners Canadian Pacific Ry Co. Port belonging to Vancouver

Nom. Horse Power as per Rule 934 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

Trade for which Vessel is intended Vancouver, coasting.

TEAM TURBINE ENGINES, &c.—Description of Engines Brown Curtis Turbine

No. of Turbines Ahead 3 Direct coupled, single reduction geared } to 3 propelling shafts. No. of primary pinions to each set of reduction gearing One

Astern 2 double reduction geared }

Direct coupled to { Alternating Current Generator ✓ phase ✓ periods per second ✓ rated ✓ Kilowatts ✓ Volts at ✓ revolutions per minute;

or supplying power for driving ✓ Propelling Motors, Type ✓

ated ✓ Kilowatts ✓ Volts at ✓ revolutions per minute. Direct coupled, single or double reduction geared to ✓ propelling shafts.

TURBINE LADING.	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												

Shaft Horse Power at each turbine { H.P. ✓ I.P. ✓ L.P. ✓ } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 2380 1st reduction wheel ✓ I.P. ✓ main shaft 430 L.P. 2380

Motor Shaft diameter at journals { H.P. ✓ I.P. ✓ L.P. ✓ } Pitch Circle Diameter { 1st pinion 8.5698" 1st reduction wheel ✓ 2nd pinion ✓ main wheel 47.3473" Face { 1st reduction wheel ✓ main wheel 21"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 10 1/8" 1st reduction wheel ✓ 2nd pinion ✓ main wheel 12 1/2"

Flexible Pinion shafts, diameter { 1st ✓ 2nd ✓ } Pinion Shafts, diameter at bearings External 5 1/4" Internal 2 1/4" { 1st ✓ 2nd ✓ } diameter at bottom of pinion teeth { 1st 8.0496 2nd ✓

Wheel Shafts, diameter at bearings { 1st 7 1/2" diameter at wheel shroud, { 1st 3-7 7/8" Generator Shaft, diameter at bearings ✓ main 7 1/2" } Propelling Motor Shaft, diameter at bearings ✓ as per rule 6.4" as fitted 6 3/4" Tube Shaft, diameter as per rule ✓ as fitted ✓

Intermediate Shafts, diameter as per rule 6.83" as fitted 6 3/8" Thrust Shaft, diameter at collars as per rule 6.4" as fitted 6 3/4" Tube Shaft, diameter as per rule ✓ as fitted ✓

Propeller Shaft, diameter as per rule 7 5/8" Is the { tube screw } shaft fitted with a continuous liner no Bronze Liners, thickness in way of bushes as per rule .51" as fitted 5/8"

Thickness between bushes as per rule ✓ 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 yes 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 yes If two liners are fitted, is the shaft lapped or protected between the liners no Is an approved Oil Gland other appliance fitted at the after end of the tube shaft no Length of Bearing in Stern Bush next to and supporting propeller 36"

Propeller, diameter 6'-1" Pitch 5'-8 1/2" King No. of Blades 3 State whether Moveable no Total Developed Surface 16 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. Turbine exhaust direct to the condenser no No. of Turbines fitted with astern wheels 2 Feed Pumps { No. and size 2-14"x10"x24 How driven Steam

Pumps connected to the Main Bilge Line { No. and size 2-7"x7"x7" duplex How driven Steam

Ballast Pumps, No. and size 2-7"x7"x7" dup Lubricating Oil Pumps, including Spare Pump, No. and size 3-6 1/2"x7"x15"

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 2-2 1/2" E.R., 2-2 1/2" B.R.

Holdings, &c. 1-2 1/2" each space

Main Water Circulating Pump Direct Bilge Suctions, No. and size 2-9 1/2" Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1-3 3/4" 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 Both

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 above

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel yes Are the Blow Off Cocks fitted with a spigot and brass covering plate yes

That pipes pass through the bunkers none How are they protected ✓

That pipes pass through the deep tanks none 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 Main Deck



BOILERS, &c.—(Letter for record *S*) Total Heating surface of Boilers *12120* $\frac{1}{2}$
 Is Forced Draft fitted *yes* No. and Description of Boilers *2 - Jarowar* Working Pressure *200*
 Is a Report on Main Boilers now forwarded?
 Is *a Donkey* Boiler fitted? *no* If so, is a report now forwarded?
 Plans. Are approved plans forwarded herewith for Shafting *15-2-27*. Main Boilers *yes* Auxiliary Boilers Donkey Boilers
 Superheaters General Pumping Arrangements *yes* Oil Fuel Burning Arrangements *yes*
 Spare Gear. State the articles supplied:— *As per Rules and attached list*

John Brown & Company, Limited
J. Henderson
 Glasgow Secretary, Manufacturers

The foregoing is a correct description,

Dates of Examination of principal parts—Casings *21-4-27 etc* Rotors *24-5-27 etc* Blading *8-9-27 etc* Gearing *1-7-27 etc*
 Wheel shaft *3-10-27* Thrust shaft *6-9-27* Intermediate shafts *3-10-27* Tube shaft Screw shaft *12-9-27*
 Propeller *10-10-27* Stern tube *22-9-27* Engine and boiler seatings *6-9-27* Engine holding down bolts *18-1-28*
 Completion of pumping arrangements *23-2-28* Boilers fixed *18-1-28* Engines tried under steam *23-2-28*
 Main boiler safety valves adjusted *9-2-28* Thickness of adjusting washers *For 4" for P 3/8" S. 2 1/4" after for P 9/32" S. 23/64*
 Rotor shaft, Material and tensile strength *S. steel 33 to 40* Identification Mark *8391. 2402. 2*
 Flexible Pinion Shaft, Material and tensile strength Identification Mark
 Pinion shaft, Material and tensile strength *S. steel 33 to 40* Identification Mark *2386. 2387. 23*
 1st Reduction Wheel Shaft, Material and tensile strength Identification Mark
 Wheel shaft, Material *S* Identification Mark *2392. 2393* Thrust shaft, Material *S* Identification Mark *2761. 2762. 2763*
 Intermediate shafts, Material *S* Identification Marks *2723. 2500* Tube shaft, Material Identification Marks
 Screw shaft, Material *S* Identification Marks *2724. 2725. 2685. 2690. 2477* Test pressure *600*
 Date of test *17-11-27 etc* Is an installation fitted for burning oil fuel *yes*
 Is the flash point of the oil to be used over 150°F. *yes* Have the requirements of the Rules for carrying and burning oil fuel been complied with *yes*
 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 machinery of this vessel was built under special survey in accordance with the approved plans and the Society's Rules and requirements, the materials, and workmanship are good, it has been securely fixed on board, and satisfactorily tried under steam and in my opinion is eligible for the record + L.M.C. 3-28 with notation fitted for oil fuel 3-28, F.P. above 150°F. and O.G. fitted.*
It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 3. 28. FD. 26. 2 Water tube boilers. Fitted for oil fuel 3. 28. FP above 150°F.

The amount of Entry Fee ... £ *6 - -* When applied for, *1 - MAR 1928*
 Special ... £ *121 - 14*
 Donkey Boiler Fee ... £ : : When received, *6 - 3 - 28*
 Travelling Expenses (if any) £ : : *1*

J. W. D.
Jas. Cairns
 7/3/28 - Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *GLASGOW 6 - MAR 1928*

Assigned + L.M.C. 3. 28. FD
 Fitted for oil fuel 3. 28. F.P. above 150°F.

