

# REPORT ON MACHINERY.

No. 41592

Received at London Office

THU 29 DEC 1921

Date of writing Report 27.12.1921 When handed in at Local Office 27.12.1921 Port of Glasgow  
 No. in Survey held at Clydebank Date, First Survey 6.5.1919 Last Survey 12.12.1921  
 Reg. Book. T.S.S. Montcalm (Number of Visits 163)  
 on the T.S.S. Montcalm Gross Tons 16418  
 Net Tons 8789  
 Master John Brown Rodin (464) When built 1921  
 Engines made at Clydebank By whom made do (464) when made 1921  
 Boilers made at Clydebank By whom made do (464) when made 1921  
 Nominal Registered Horse Power 2476 Owners Canadian Pacific Railway Co. Port belonging to Liverpool  
 Is Horse Power at Full Power 13500 Is Refrigerating Machinery fitted for cargo purposes yes Is Electric Light fitted yes

BINE ENGINES, &c.—Description of Engines Brown Curtis DR Geared Turbines No. of Turbines 2HP ahead 21P ahead + astern  
 Diameter of Pinion Shaft HP+IP 6" with 2 3/4" hole. LP 8 1/2" with 4" hole  
 Diameter of Pitch Circle HP+IP 10' 4 7/8" LP 16' 2 1/2" Red 29' 9 1/4"  
 Diameter of Pitch Circle of Wheel 123' 6 1/8"  
 Diameter of Thrust Shaft under Collars 19 1/8"  
 Diameter of Tunnel Shaft as per rule approved 17 3/4"  
 Diameter of Propeller 19' 6" Pitch of Propeller 19' 6"  
 Diameter of Rotor Drum, H.P. ✓ L.P. ✓ Astern ✓  
 Revs. per Minute at Full Power, Turbine HP+IP 2900 ✓ LP 1870 ✓ Propeller 95 ✓

## DETAILS OF BLADING.

H.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.
EXPANSION								
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Size of Feed pumps 4 main 17"-12 1/2" x 24" 2 aux 10 1/2"-7" x 24"  
 Size of Bilge pumps 2 main 10"-12" x 12" 1 of 15"-11 1/2" x 15" 1 emergency motor driven centrifugal 5" discharge  
 Size of Bilge suction in Engine Room 2 of 3 1/2" 4 of 3 1/2" 4 of 2 1/2" in oil gutterways 2 of 3 1/2" 4 of 2 1/2"  
 In Holds, &c. Forward 4 of 3 1/2" aft 2 of 3 1/2" 6 of 2 1/2"

Bilge Injections 2 sizes 15" Connected to condenser, or to circulating pump pump Is a separate Donkey Suction fitted in Engine Room & size yes 2 of 6"  
 All the bilge suction pipes fitted with roses yes Are the roses in Engine room always accessible yes  
 All connections with the sea direct on the skin of the ship stand pipes through Double Bottom Are they Valves or Cocks both  
 They fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates yes Are the Discharge Pipes above or below the deep water line below  
 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  
 Pipes are carried through the bunkers oil steam heating pipes only How are they protected —  
 All Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times yes  
 The Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges yes  
 The Screw Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from top platform & Bridge

MAKERS, &c.—(Letter for record ✓) Manufacturers of Steel D Colville Sons Steel Co of Scotland  
 Heating Surface of Boilers 28442 sq ft Is Forced Draft fitted yes No. and Description of Boilers 10 single ended  
 Working Pressure 215 lbs Tested by hydraulic pressure to 377 lbs Date of test 2-12-1914 11-19-19 9-2-20 No. of Certificate 15015-15005-15097 15127-15061  
 Each boiler be worked separately yes Area of fire grate in each boiler oil fired No. and Description of Safety Valves to —  
 boiler 2 direct spring Area of each valve 9.62" Pressure to which they are adjusted 220 lbs Are they fitted with easing gear yes  
 Least distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 16'-0" Length 11'-6" Material of shell plates steel  
 Thickness 1 1/2" Range of tensile strength 30/34 tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams double lap  
 seams DBS-TR Diameter of rivet holes in long. seams 1 7/8" Pitch of rivets 10 1/2" Lap of plates or width of butt straps 22 3/8"  
 Percentages of strength of longitudinal joint 90.5 Working pressure of shell by rules 237 Size of manhole in shell 20 1/2" x 16 1/4"

of compensating ring 38x34 x 1 1/2" No. and Description of Furnaces in each Boiler 3 Morrison Material steel Outside diameter 50 3/4"  
 Thickness of plates 3/4" Description of longitudinal joint weld No. of strengthening rings —  
 Working pressure of furnace by the rules 218 Combustion chamber plates: Material steel Thickness: Sides 3/32" Back 1/16" Top 3/32" Bottom 2" Spigot plate  
 Thickness of stays 9 3/4" x 7 1/2" in Back 9" x 8" Top 9 3/4" x 7 1/4" If stays are fitted with nuts or riveted heads nuts Working pressure by rules 215 lbs  
 Material of stays steel Thickness 1 3/2" Pitch of stays 19 1/2" x 16 1/2" How are stays secured DN Working pressure by rules 229 Material of stays steel  
 Material of Front plates at bottom steel Working pressure by rules 248 Material of Lower back plate steel Thickness 1" Greatest pitch of stays 13 3/4" Working pressure of plate by rules 256  
 Material of tube plates steel Thickness: Front 3/32" Back 1/16" Mean pitch of stays 10"  
 Working pressures by rules 216 + 315 Girders to Chamber tops: Material steel Depth and thickness of girder at centre 11" x 3 1/2" double Length as per rule 33 3/8" Distance apart 9 3/4" Number and pitch of stays in each 3 of 3 1/2"  
 Working pressure by rules 224 Steam dome: description of joint to shell none % of strength of joint — Diameter of rivet holes — Pitch of rivets —  
 Thickness of shell plates — Material — Description of longitudinal joint — Diameter of rivet holes — Pitch of rivets —  
 Working pressure of shell by rules — Crown plates: Thickness — How stayed —



**SUPERHEATER.** Type *Schmidt* Date of Approval of Plan *See Mech Rept C 1210* Tested by Hydraulic Pressure to *—*

Date of Test *—* Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *yes*

Diameter of Safety Valve *2"* Pressure to which each is adjusted *22.5 lbs* Is Easing Gear fitted *yes*

**IS A DONKEY BOILER FITTED?** *No* If so, is a report now forwarded? *—*

**SPARE GEAR.** State the articles supplied:— *See attached list*

The foregoing is a correct description,

*John Brown & Company, Limited.*

*Manufacturers.*  
*Glydebank Secretary.*

Dates of Survey while building

During progress of work in shops	1919 May 6, 26, 30, Jan 4, 13, 23, 27, July 7, 31, Aug 8, Sep 8, 17, Oct 3, 9, 17, 23, 27, Nov 14, 20, 24, 28, Dec 12, 18, 29, 1920 Jan 23, 24, 29, Feb 27, Mar 27, May 3, 5, 20, 24, 31, Jun 2, 4, 7, 11, 14, 21, 23, 18, 25, 28, July 1, 5, 8, 12, Aug 4, 6, 11, 12, 17, 19, 20, 27, 31, Sep 2, 6, 9, 13, 17, 20, 24, 30, Oct 1, 2, 3, 6, 8, 11, 12, 18, 20, 24, 25, 10, 12, 18, 24, Dec 1, 2, 20, 23, 1921 Jan 13, 14, 17, 24, 31, Feb 7, 8, 10, 14, 17, 21, 25, 28, Mar 2, 7, 9, 11, 14, 21, 23, 24, 31, Apr 8, 11, 12, 18, 20, 24, 25, 29, 29, May 10, 13, 16, 17, 19, 23, Jun 6, 8, 9, 10, 14, 17, 21, 23, 27, 29, 30, July 6, 8, 29, Aug 4, 5, 8, 12, 16, 19, 24, Sep 1, 2, 3, 6, 12.
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Total No. of visits *163*

Is the approved plan of main boiler forwarded herewith *yes*

Dates of Examination of principal parts—Casings *13/6/19, 25/11/19* Rotors *5/11/20* Blading *5/11/20* Gearing *5/11/20*

Rotor shaft *5/11/20* Thrust shaft *7/7/19* Tunnel shafts *7/7/19* Screw shaft *7/7/19* Propeller *14/6/20*

Stern tube *7/7/19* Steam pipes tested *19/8/20, 8/10/20, 24/10/20* Engine and boiler seatings *27/6/20* Engines holding down bolts *17/11/21*

Completion of pumping arrangements *12/8/21* Boilers fixed *1/2/21* Engines tried under steam *14/12/21*

Main boiler safety valves adjusted *12/8/21* Thickness of adjusting washers *A 1/4, B 3/4, C 1/2, D 3/4, E 1/2, F 3/4, G 1/2, H 3/4, J 1/2, K 3/4, L 1/2, M 3/4, N 1/2, O 3/4, P 1/2, Q 3/4, R 1/2, S 3/4, T 1/2, U 3/4, V 1/2, W 3/4, X 1/2, Y 3/4, Z 1/2*

Material and tensile strength of Rotor shaft *S.M. Steel 34 5 38 Lons* Identification Mark on Do. *2772, 2773, 2774, 2775, 2776, 2777, 2778, 2779, 2780, 2781, 2782, 2783, 2784, 2785, 2786, 2787, 2788, 2789, 2790, 2791, 2792, 2793, 2794, 2795, 2796, 2797, 2798, 2799, 2800, 2801, 2802, 2803, 2804, 2805, 2806, 2807, 2808, 2809, 2810, 2811, 2812, 2813, 2814, 2815, 2816, 2817, 2818, 2819, 2820, 2821, 2822, 2823, 2824, 2825, 2826, 2827, 2828, 2829, 2830, 2831, 2832, 2833, 2834, 2835, 2836, 2837, 2838, 2839, 2840, 2841, 2842, 2843, 2844, 2845, 2846, 2847, 2848, 2849, 2850, 2851, 2852, 2853, 2854, 2855, 2856, 2857, 2858, 2859, 2860, 2861, 2862, 2863, 2864, 2865, 2866, 2867, 2868, 2869, 2870, 2871, 2872, 2873, 2874, 2875, 2876, 2877, 2878, 2879, 2880, 2881, 2882, 2883, 2884, 2885, 2886, 2887, 2888, 2889, 2890, 2891, 2892, 2893, 2894, 2895, 2896, 2897, 2898, 2899, 2900, 2901, 2902, 2903, 2904, 2905, 2906, 2907, 2908, 2909, 2910, 2911, 2912, 2913, 2914, 2915, 2916, 2917, 2918, 2919, 2920, 2921, 2922, 2923, 2924, 2925, 2926, 2927, 2928, 2929, 2930, 2931, 2932, 2933, 2934, 2935, 2936, 2937, 2938, 2939, 2940, 2941, 2942, 2943, 2944, 2945, 2946, 2947, 2948, 2949, 2950, 2951, 2952, 2953, 2954, 2955, 2956, 2957, 2958, 2959, 2960, 2961, 2962, 2963, 2964, 2965, 2966, 2967, 2968, 2969, 2970, 2971, 2972, 2973, 2974, 2975, 2976, 2977, 2978, 2979, 2980, 2981, 2982, 2983, 2984, 2985, 2986, 2987, 2988, 2989, 2990, 2991, 2992, 2993, 2994, 2995, 2996, 2997, 2998, 2999, 3000*

Material and tensile strength of Pinion shaft *Nickel Steel 40 to 45 Lons* Identification Mark on Do. *2772, 2773, 2774, 2775, 2776, 2777, 2778, 2779, 2780, 2781, 2782, 2783, 2784, 2785, 2786, 2787, 2788, 2789, 2790, 2791, 2792, 2793, 2794, 2795, 2796, 2797, 2798, 2799, 2800, 2801, 2802, 2803, 2804, 2805, 2806, 2807, 2808, 2809, 2810, 2811, 2812, 2813, 2814, 2815, 2816, 2817, 2818, 2819, 2820, 2821, 2822, 2823, 2824, 2825, 2826, 2827, 2828, 2829, 2830, 2831, 2832, 2833, 2834, 2835, 2836, 2837, 2838, 2839, 2840, 2841, 2842, 2843, 2844, 2845, 2846, 2847, 2848, 2849, 2850, 2851, 2852, 2853, 2854, 2855, 2856, 2857, 2858, 2859, 2860, 2861, 2862, 2863, 2864, 2865, 2866, 2867, 2868, 2869, 2870, 2871, 2872, 2873, 2874, 2875, 2876, 2877, 2878, 2879, 2880, 2881, 2882, 2883, 2884, 2885, 2886, 2887, 2888, 2889, 2890, 2891, 2892, 2893, 2894, 2895, 2896, 2897, 2898, 2899, 2900, 2901, 2902, 2903, 2904, 2905, 2906, 2907, 2908, 2909, 2910, 2911, 2912, 2913, 2914, 2915, 2916, 2917, 2918, 2919, 2920, 2921, 2922, 2923, 2924, 2925, 2926, 2927, 2928, 2929, 2930, 2931, 2932, 2933, 2934, 2935, 2936, 2937, 2938, 2939, 2940, 2941, 2942, 2943, 2944, 2945, 2946, 2947, 2948, 2949, 2950, 2951, 2952, 2953, 2954, 2955, 2956, 2957, 2958, 2959, 2960, 2961, 2962, 2963, 2964, 2965, 2966, 2967, 2968, 2969, 2970, 2971, 2972, 2973, 2974, 2975, 2976, 2977, 2978, 2979, 2980, 2981, 2982, 2983, 2984, 2985, 2986, 2987, 2988, 2989, 2990, 2991, 2992, 2993, 2994, 2995, 2996, 2997, 2998, 2999, 3000*

Material of Wheel shaft *Steel* Identification Mark on Do. *2772, 2773, 2774, 2775, 2776, 2777, 2778, 2779, 2780, 2781, 2782, 2783, 2784, 2785, 2786, 2787, 2788, 2789, 2790, 2791, 2792, 2793, 2794, 2795, 2796, 2797, 2798, 2799, 2800, 2801, 2802, 2803, 2804, 2805, 2806, 2807, 2808, 2809, 2810, 2811, 2812, 2813, 2814, 2815, 2816, 2817, 2818, 2819, 2820, 2821, 2822, 2823, 2824, 2825, 2826, 2827, 2828, 2829, 2830, 2831, 2832, 2833, 2834, 2835, 2836, 2837, 2838, 2839, 2840, 2841, 2842, 2843, 2844, 2845, 2846, 2847, 2848, 2849, 2850, 2851, 2852, 2853, 2854, 2855, 2856, 2857, 2858, 2859, 2860, 2861, 2862, 2863, 2864, 2865, 2866, 2867, 2868, 2869, 2870, 2871, 2872, 2873, 2874, 2875, 2876, 2877, 2878, 2879, 2880, 2881, 2882, 2883, 2884, 2885, 2886, 2887, 2888, 2889, 2890, 2891, 2892, 2893, 2894, 2895, 2896, 2897, 2898, 2899, 2900, 2901, 2902, 2903, 2904, 2905, 2906, 2907, 2908, 2909, 2910, 2911, 2912, 2913, 2914, 2915, 2916, 2917, 2918, 2919, 2920, 2921, 2922, 2923, 2924, 2925, 2926, 2927, 2928, 2929, 2930, 2931, 2932, 2933, 2934, 2935, 2936, 2937, 2938, 2939, 2940, 2941, 2942, 2943, 2944, 2945, 2946, 2947, 2948, 2949, 2950, 2951, 2952, 2953, 2954, 2955, 2956, 2957, 2958, 2959, 2960, 2961, 2962, 2963, 2964, 2965, 2966, 2967, 2968, 2969, 2970, 2971, 2972, 2973, 2974, 2975, 2976, 2977, 2978, 2979, 2980, 2981, 2982, 2983, 2984, 2985, 2986, 2987, 2988, 2989, 2990, 2991, 2992, 2993, 2994, 2995, 2996, 2997, 2998, 2999, 3000*

Material of Tunnel shafts *Steel* Identification Marks on Do. *3247, 3658* Material of Screw shafts *Steel* Identification Marks on Do. *310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000*

Material of Steam Pipes *Steel* Test pressure *645 lbs*

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 Section 49 of the Rules 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, etc.) *These engines & boilers have been built under special survey, the materials and workmanship are of description, they have been well fitted on board and tried under steam*

*In my opinion this machinery is eligible to have notification of + L.M.C. 12.21 and fitted for oil fuel F.P. above 150°F.*

*It is submitted that this vessel is eligible for*

*THE RECORD. + L.M.C. - 12.21. F.D. C.L. 2476 N.H.P.*

*Fitted for Oil Fuel, 12.21, F.P. above 150°F.*

*4 steam turbines geared to 2 screw shafts.*

*2/1/21*

*2/1/21*

*2/1/21*

*2/1/21*

*2/1/21*

*2/1/21*

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*2/1/21*

*2/1/21*

Certificates (if required) to be sent to...

The amount of Entry Fee ... £ 6 : : When applied for, 19

Special ... £ 161 : 18 : : When received, 31.12.19

Donkey Boiler Fee ... £ : : : 31.12.19

Travelling Expenses (if any) £ : : : 31.12.19

Committee's Minute *GLASGOW 27 DEC 1921*

Assigned *+ L M C 12.21*

*Fitted for oil fuel 12.21 F.P. above 150°F.*

*A. McKeand*  
Engineer Surveyor to Lloyd's Register of Shipping.

*9.1.22*  
*(dated 28/12/21)*

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Lloyd's Register  
Foundation