

# REPORT ON BOILERS.

Received at London Office

2 DEC 1942

Date of writing Report **Oct. 14th 1942** When handed in at **Local Office** **Oct. 14th 1942** Port of **Vancouver, B. C.**

No. in Survey held at **North Vancouver, B. C.** Date, First Survey **July 31st, 1942** Last Survey **October 8th 1942**

Reg. Book. **Steel Single Screw Steamer "FORT VERMILLION"** (Number of Visits **22**) Tons **Gross 7133.39**  
**Net 4243.42**

Built at **North Vancouver, B.C.** By whom built **Burrard Dry Dock Co. Ltd.** Yard No. **165** When built **1942**

Engines made at **Montreal, P.Q.** By whom made **Dominion Engineering Wks.** Engine No. **40** When made **1942**

Boilers made at **Vancouver, B. C.** By whom made **Dominion Bridge Co. Ltd.** Boiler No. **248** When made **1942**

Nominal Horse Power **504** Owners **Minister of Munitions & Supply** Port belonging to **of Canada.**

## MULTITUBULAR BOILERS—MAIN, ~~AUXILIARY, OR DONKEY~~

Manufacturers of Steel **Worth Steel Co., Lukens Steel Co., American Welding Co., Bethlehem Steel Co.** (Letter for Record **S**)

Total Heating Surface of Boilers **7140 Sq. Ft.** Is forced draught fitted **Yes** Coal or Oil fired **Coal**

No. and Description of Boilers **Three Single ended Cylindrical multitubular** Working Pressure **220 lbs.**

Tested by hydraulic pressure to **380 lbs.** Date of test **17-8-42** No. of Certificate **248** Can each boiler be worked separately **Yes**

Area of Firegrate in each boiler **51 sq. ft.** No. and Description of Safety valves to each boiler **Two 2 1/4" dia. Morrison High Lift**

Area of each set of valves per boiler {per Rule **7.5 sq. ins.** Pressure to which they are adjusted **220** Are they fitted with easing gear **Yes**  
{as fitted **7.95 sq. ins.** *approved*

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler **No donkey boiler**

Smallest distance between boilers or uptakes and bunkers or woodwork **2 Ft.** Is oil fuel carried in the double bottom under boilers **No**

Smallest distance between shell of boiler and tank top plating **2 Ft.** Is the bottom of the boiler insulated **Yes**

Largest internal diameter of boilers **14'-6-3/16"** Length **11'-9" ext.** Shell plates: Material **O.H. Steel** Tensile strength **29-33 tons**

Thickness **1-13/32"** Are the shell plates welded or flanged **No** Description of riveting: circ. seams {end **Double**  
inter **--**

Long. seams **Treble Riv. Double butt straps.** Diameter of rivet holes in {circ. seams **1-1/2"** Pitch of rivets {end **4-3/16" approx.**  
long. seams **1-1/2"** inter **10-1/16"**

Percentage of strength of circ. end seams {plate **64.2%** Percentage of strength of circ. intermediate seam {plate **--**  
rivets **47.6%** rivets **--**

Percentage of strength of longitudinal joint {plate **85.1%**  
rivets **92.8%** combined **88.7%**

Thickness of butt straps {outer **1-3/32** No. and Description of Furnaces in each Boiler **3 Morrison Corrugated Stephen Gourley**  
inner **1-7/32** end.

Material **O.H. Steel** Tensile strength **26-30 tons** Smallest outside diameter **41-9/16"**

Length of plain part {top **9-3/16"** Thickness of plates {crown **21/32"** Description of longitudinal joint **Forge Weld**  
bottom **9-3/16"** bottom **--**

Dimensions of stiffening rings on furnace or c.c. bottom

End plates in steam space: Material **O.H. Steel** Tensile strength **26 - 30 tons** Thickness **1-7/16"** Pitch of stays **21" x 21"**

How are stays secured **Double nuts and 6-3/4" x 1/4" washers each end**

Tube plates: Material {front **O.H. Steel** Tensile strength { **26 - 30 tons** Thickness { **31/32**  
back **O.H. Steel** **26 to 30 tons** **13/16**

Mean pitch of stay tubes in nests **9.82"** Pitch across wide water spaces **8-1/4" x 14-1/2"**

Girders to combustion chamber tops: Material **O.H. Steel** Tensile strength **29 - 33 tons** Depth and Thickness of girder

at centre **double 10-1/4" x 7/8"** Length as per Rule **34"** Distance apart **11"** No. and pitch of stays

in each **3- 7-5/8** Combustion chamber plates: Material **O.H. Steel**

Tensile strength **26 - 30 tons** Thickness: Sides **25/32** Back **23/32** Top **25/32** Bottom **25/32**

Pitch of stays to ditto: Sides **9"x10-3/16"** Back **9"x8" Cent. CC** Top **7-5/8" x 11"** Are stays fitted with nuts or riveted over **Nuts**

Front plate at bottom: Material **O.H. Steel** Tensile strength **26 - 30 tons**

Thickness **31/32"** Lower back plate: Material **O.H. Steel** Tensile strength **26 - 30 tons** Thickness **29/32**

Pitch of stays at wide water space **9" x 14-1/2"** Are stays fitted with nuts or riveted over **Nuts**

Main stays: Material **O.H. Steel** Tensile strength **28 - 32 tons**

Diameter {At body of stay **3-1/2"** No. of threads per inch **6**  
or **3-3/4"** Over threads

Screw stays: Material **O.H. Steel** Tensile strength **26 - 30 tons**

Diameter {At turned off part **1.606** No. of threads per inch **9**  
or **1-3/4"** Over threads



Are the stays drilled at the outer ends No Margin stays: Diameter { At turned off part, 1.856" or Over threads, 2"

No. of threads per inch 9

Tubes: Material O.H. Steel External diameter { Plain 3" Stay 3" Thickness { .16" No. of threads per inch 9

Pitch of tubes 4-1/8" x 4-1/4" Manhole compensation: Size of opening in End shell plate 16" x 12" Section of compensating ring -- No. of rivets and diameter of rivet holes --

Outer row rivet pitch at ends -- Depth of flange if manhole flanged 4-1/4" Upper 4-1/4" Lower 3-1/2" Steam Dome: Material --

Tensile strength -- Thickness of shell -- Description of longitudinal joint --

Diameter of rivet holes -- Pitch of rivets -- Percentage of strength of joint { Flats -- Rivets --

Internal diameter -- Thickness of crown -- No. and diameter of stays -- Inner radius of crown --

How connected to shell -- Size of doubling plate under dome -- Diameter of rivet holes and pitch of rivets in outer row in dome connection to shell --

Type of Superheater "ELESCO" Smoke box type Manufacturers of { Tubes ( National Tube Co., Steel forgings (Pittsburg, Penna.) Steel castings

Number of elements 58 Material of tubes S.D. Steel Internal diameter and thickness of tubes .69" .095" (BBWG min)

Material of headers O.H. Steel Tensile strength 33.5 tons Thickness 1-1/8" min. Can the superheater be shut off and the boiler be worked separately No Is a safety valve fitted to every part of the superheater which can be shut off from the boiler Yes

Area of each safety valve 1.75 per sq. inch. Are the safety valves fitted with easing gear Yes

Pressure to which the safety valves are adjusted 220 lbs. per sq. inch Hydraulic test pressure: tubes 1500 lbs. per sq. inch. forgings and castings 600 lbs. per sq. inch. and after assembly in place 440 lbs. per sq. inch. Are drain cocks or valves fitted to free the superheater from water where necessary Yes

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with Yes

The foregoing is a correct description,  
**DOMINION BRIDGE CO. LTD.** Manufacturer.  
*R.A.M. Lodge*

Dates of Survey { During progress of work in shops - - 1942. July 31. Aug. 4, 7, 8, 13, 17, 19. Are the approved plans of boiler and superheater forwarded herewith Approved Plans in U.K. (If not state date of approval.)  
 while building { During erection on board vessel - - - 1942. - Aug. 31. Sept. 2, 9, 11, 12. Sept. 14, 15, 16, 17, 21, 22, 23, 24, 29, 30. Total No. of visits 22  
Oct. 1, 2, 3, 5, 6, 7, 8.

Is this Boiler a duplicate of a previous case Yes If so, state Vessel's name and Report No. S.S. "FORT ST. JAMES" (Ver. Rpt. No. 5718)

**GENERAL REMARKS** (State quality of workmanship, opinions as to class, &c.)

These boilers have been constructed under special survey of tested materials in accordance with the approved plans, New York letters and otherwise in conformity with the Society's Rules.

On completion the boilers were satisfactorily tested under hydraulic pressure to 380 lbs. per sq. inch.

They were fitted on board under special survey, examined under working conditions, safety valves adjusted under steam to the working pressure and a satisfactory accumulation test carried out.

Cross seam of both end plates is fusion welded by Union Melt Process, stress relieved and X-rayed under survey. Certificate attached, welds ground flush both sides of plate.

Combustion chamber wrapper plates welded to back tube plate and combustion chamber back plate; wrapper plate butts also welded, all hand welding and ground flush and tested as per Rule.

Survey Fee ... .. £\$150.00 : When applied for, 8th Oct. 1942  
 Travelling Expenses (if any) £\$ 15.00 : When received, ✓

*R. Knox & W.C. Baillie*  
 Engineer Surveyors to Lloyd's Register of Shipping.

Committee's Minute FRI. 4 DEC 1942

Assigned See Ver. 5820

