

# REPORT ON BOILERS.

Received at London Office

29 JUL 1943

Date of writing Report **31st May, 1943** When handed in at Local Office **31st May, 1943** Port of **Vancouver, B. C.**

No. in Reg. Book. Survey held at **Vancouver, B. C.** Date, First Survey **19th April, 1943** Last Survey **25th May, 1943**

(Number of Visits **18**) Tons { Gross **7133.61**  
Net **4243.79**

on the **Steel Single Screw Steamer "FORT CUMBERLAND"**

Built at **Vancouver, BC** By whom built **Burrard Dry Dock Co. Ltd.** Yard No. **172** When built **1943**

Engines made at **Montreal, P.Q.** By whom made **Canadian-Allis Chalmers, Ltd.** Engine No. **237** When made **1943**

Boilers made at **Vancouver, B. C.** By whom made **Dominion Bridge Co. Ltd.** Boiler No. **436**  
**439**  
**440** When made **1943**

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

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

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

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 **29-4-43** No. of Certificate **436** 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 **6.35 sq. ins.** Pressure to which they are adjusted **220** Are they fitted with easing gear **Yes**  
as fitted **7.95 sq. ins.**

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 dia. 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 { **4-3/16" approx.**  
long. seams **1-1/2"** **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%** Working pressure of shell by Rules **--**  
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 **--** Working pressure of furnace by Rules **--**

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 & 6-3/4" x 1/4" washers each end** Working pressure by Rules

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"** Working Pressure { front **--**  
back **--**

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

(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** Working pressure by Rules **--** 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" x 10-3/16"** Back **9" x 8 1/2" Cent CC** Top **7-5/8" x 11"** Are stays fitted with nuts or riveted over **Nuts**

Working pressure by Rules **--** 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**

Working pressure **--** 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** Area supported by each stay **--**  
or **3-3/4"**

Working pressure by Rules **--** Screw stays: Material **O.H. Steel** Tensile strength **26 - 30 tons**

Diameter { At turned off part **1.606** No. of threads per inch **9** Area supported by each stay **--**  
or **1-3/4"**



Working pressure by Rules -- 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** Area supported by each stay -- Working pressure by Rules --

Tubes: Material **O.H. Steel** External diameter { Plain **3"** Stay **3"** Thickness { **.16"** **3/8" & 5/16"** No. of threads per inch **9**

Pitch of tubes **4-1/8" x 4-1/4"** Working pressure by Rules -- Manhole compensation: Size of opening in end 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 **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 { Plate -- Rivets --

Internal diameter -- Working pressure by Rules -- Thickness of crown -- No. and diameter of stays -- Inner radius of crown -- Working pressure by Rules --

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 -- Steel forgings **(National Tube Co.,** Steel castings **(Pittsburg, Penna.**

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** Working pressure as per Rules -- Pressure to which the safety valves are adjusted **220 lbs. per sq. inch** Hydraulic test pressure: tubes **2500 lbs. per sq. inch.** forgings and castings **550 lbs. per sq. inch.** and after assembly in place **Steam test** 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.

Dates of Survey { During progress of work in shops - - } **April, 1943. 19, 21, 24, 27, 29. May 1, 4.** Are the approved plans of boiler and superheater forwarded herewith **Approved Plans in U.K.** (If not state date of approval.)

{ During erection on board vessel - - } **May 8, 10, 11, 13, 17, 18, 19, 20, 21, 24, & 25.** Total No. of visits **18**

Is this Boiler a duplicate of a previous case **Yes** If so, state Vessel's name and Report No. **S.S. "FORT CHILCOTIN" (Ver. Report 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. 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 **25th May, 1943**

Travelling Expenses (if any) **\$ 15.00** : } When received **19**

*R. Knox & W. E. Baillie*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **TUES. 7 SEP 1943**

Assigned *see minute on 38. Rpt.*



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