

REPORT ON BOILERS.

E 2 AUG 1945

Received at London Office

Date of writing Report **15th June 1945** When handed in at Local Office **15th June 1945** Port of **Vancouver, B. C.**

No. in Reg. Book **North Vancouver, B. C.** Survey held at **North Vancouver, B. C.** Date, First Survey **Feb. 2nd 1945** Last Survey **June 8th 1945**

(Number of Visits **16**) Tons { Gross **7149.58**
Net **4214.21**

on the **Steel Single Screw Steamer "HIGHLAND PARK"**
Built at **North Vancouver, B.C.** By whom built **North Van Ship Repairs Ltd.** Yard No. **152** When built **1945**
Engines made at **Lachine, Quebec** By whom made **Canadian Allis-Chalmers Ltd.** Engine No. **393** When made **1945**
Boilers made at **Vancouver, B.C.** By whom made **Vancouver Iron Works Ltd.** Boiler No. **P 822 Cr819 S 821** When made **1945**
Nominal Horse Power **505** Owners **Minister of Munitions & Supply of Canada (Mgrs. Park Steamship Co. Ltd.)** Port belonging to **Montreal, P. Q.**

MULTITUBULAR BOILERS—MAIN, ~~REHEATING, OR DONKEY~~

Manufacturers of Steel **Algoma Steel Co., Page-Hersey Tubes Ltd., Worth Steel Co., Steel Co. of Canada, American Welding Co.** (Letter for Record **S**)
Total Heating Surface of Boilers **7140 sq. ft. total** Is forced draught fitted **Yes** Coal or Oil fired **Either**

No. and Description of Boilers **Three - Single Ended Cylindrical Multitubular** Working Pressure **220 lbs. per square inch**
Tested by hydraulic pressure to **380 lbs.** Date of test **10-2-45** No. of Certificate **819** 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" Morrison High Lift**
Area of each set of valves per boiler { per Rule **6.35 sq. ins.** Pressure to which they are adjusted **220 lbs.** 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 **65000-77000 lbs.**
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 Strap** Diameter of rivet holes in { circ. seams **1-1/2"** Pitch of rivets { **4-3/16" Approx.**
long. seams **1-1/2"** rivets **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 **221.2 lbs.**
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 Gourlay end**
inner **1-7/32"** Material **O. H. Steel** Tensile strength **55000 - 65000 lbs.** Smallest outside diameter **41-9/16"**

Length of plain part { top **10"** Thickness of plates { crown **21/32"** Description of longitudinal joint **Forge Weld**
bottom **10"** bottom

Dimensions of stiffening rings on furnace or c.c. bottom - - Working pressure of furnace by Rules **230.9 lbs.**
Head plates in steam space: Material **O.H. Steel** Tensile strength **55000-65000 lbs.** Thickness **1-15/32"** Pitch of stays **21" x 21"**

How are stays secured **Double Nuts & 6-3/4" x 1/4" washer each end** Working pressure by Rules **230.3 lbs.**
Tube plates: Material { front **O.H. Steel** Tensile strength { **55000-65000 lbs.** Thickness { **1"**
back **O.H. Steel** **58000-68000 lbs.** **13/16"**

Lean pitch of stay tubes in nests **9.8"** Pitch across wide water spaces **8-1/4" x 14-1/2"** Working Pressure { front **245 lbs.**
back **247 lbs.**

Girders to combustion chamber tops: Material **O.H. Steel** Tensile strength **65000 - 75000 lbs.** Depth and thickness of girder
Double **11"x7/8"** Length as per Rule **34"** Distance apart **11"** No. and pitch of stays

each **3 - 7-3/8"** Working pressure by Rules **261.6 lbs.** Combustion chamber plates: Material **O.H. Steel**
Tensile strength **58000 - 68000 lbs.** 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 1/2" Cent.C.C.** Top **7-3/8"x11"** Are stays fitted with nuts or riveted over **Nuts**
Working pressure by Rules **224 lbs.** Front plate at bottom: Material **O.H. Steel** Tensile strength **55000-65000 lbs.**

Thickness **1"** Lower back plate: Material **O.H. Steel** Tensile strength **55000-65000 lbs.** Thickness **15/16"**
Pitch of stays at wide water space **9" x 14-1/2"** Are stays fitted with nuts or riveted over **Nuts**

Working pressure **232 lbs.** Main stays: Material **O.H. Steel** Tensile strength **63000-73000 lbs.**
Diameter { At body of stay **3-1/2"** No. of threads per inch **6** Area supported by each stay **441 sq. ins.**
or **3-3/4"**

Working pressure by Rules **245 lbs.** Screw stays: Material **O.H. Steel** Tensile strength **58000-68000 lbs.**
Diameter { At turned off part **1.606** No. of threads per inch **9** Area supported by each stay **81 sq. ins.**
or **1.75"**

Working pressure by Rules **224 lbs.** 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 **105.75 sq. in.** Working pressure by Rules **232 lbs.**

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

Pitch of tubes **4-1/8" x 4-1/4"** Working pressure by Rules **250 lbs.** Manhole compensation: Size of opening

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 **4-1/4"** **3-1/2"** Upper Lower 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 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 **(National Tube Co.)** Steel forgings **(Ellwood City, Pa.)** Steel castings **(Pa.)**

Number of elements **58** Material of tubes **S.D. Steel** Internal diameter and thickness of tubes **.69"** **.095" (B.B.W. Min.)**

Material of headers **O.H. Steel** Tensile strength **33.5 Tons** Thickness **1-1/8" Min** Can the superheater be shut off from 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 **1.767 sq. ins.** Are the safety valves fitted with easing gear **No** Working pressure as Rules **520 lbs. per sq. in.** Pressure to which the safety valves are adjusted **220 lbs. per sq. in.** Hydraulic test pressure tubes **2500 lbs. per sq. in.** forgings and castings **550 lbs. per sq. in.** and after assembly in place **Steam Test** Are drain cocks 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,
VANCOUVER IRON WORKS LTD. Manufacturer

Dates of Survey { During progress of work in shops -- } **1945 Feb. 2, 5, 7, 8, 9, 10, 12, 13** Are the approved plans of boiler and superheater forwarded herewith **Approved**
(If not state date of approval.)
while building { During erection on board vessel -- } **1945 May 16, 23, 26, 28, 31** **plans forwarded with Ver. Rpt. No. 6426. 16**
Total No. of visits **June 2, 5, 8**

Is this Boiler a duplicate of a previous case **Yes** If so, state Vessel's name and Report No. **S.S. "WINONA PARK" Ver. Rpt. No. 6**

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 satisfactory accumulation test carried out.**

Cross seams of both end plates are fusion welded by Union Melt Process; stress relieved under Survey. Welds ground flush both sides of plate. Combustion chamber wrapper plates welded to back tube plate and combustion chamber back plate; butts of combustion chamber wrapper plates all welded, all Union Melt Automatic welding tested as per Rule and ground flush. Furnaces hand electric butt welded to back tube plate and lap welded to lower front end plate; butt welds ground flush.

Survey Fee ... **\$150.00** : } When applied for **June 12th 1945**
Travelling Expenses (if any) **\$ 15.00** : } When received **19**

R. K. Caldwell
Engineer Surveyor to Lloyd's Register of Shipping

FRI. 10 AUG 1945

Committee's Minute

Assigned **Sir F. F. Machy, rpt.**

