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REPORT ON BOILERS.

No. 898-9-03

30th

JUL 1943

Received at London Office

Date of writing Report **June 2 43** **Nov. 2 42** When handed in at London Office **June 5th. 43** Port of **TORONTO, CANADA**

No. in Reg. Book. Survey held at **TORONTO, CANADA** Date, First Survey **Aug. 21/42** Last Survey **May 31st., 43** **Sept. 24, 1942** **Oct 28 19 42**

on the **10,000 ton Cargo Vessel "FORT CARILLON"** (Number of Visits **24 & 48**) Tons **7129.23** Gross **4243.42** Net

Built at **Lauzon, (Levis) Que.** By whom built **Davie Shipbuilding & Repairing Co., Ltd.** Yard No. **542** When built **1943**

Engines made at **Lachine, P.Q.** By whom made **Dominion Engineering Works Ltd.** Engine No. **59** When made **1942**

Boilers made at **Toronto, Ontario** By whom made **John Inglis Co. Ltd.** Boiler No. **25-4380** **26-4381** **27-4382** When made **1942**

Nominal Horse Power **504** Owners **Wartime Merchant Shipping Ltd.** Port belonging to

MULTITUBULAR BOILERS—MAIN, AUXILIARY, OR DONKEY.

Manufacturers of Steel Heads, Lukens Steel Co. Shell, Bethlehem Steel Co. C.C. Plates, **Steel Co. of Canada** (Letter for Record)

Total Heating Surface of Boilers **7140 Sq. Ft.** Is forced draught fitted **yes** Coal or Oil fired **Coal** **220 lbs.**

No. and Description of Boilers **Three 14 Ft. 9" ext. dia. x 11'9" long Scotch Marine** Working Pressure **per Sq. In.**

Tested by hydraulic pressure to **380 lbs.** Date of test **10.10.42** No. of Certificate **898** Can each boiler be worked separately **Yes**

Area of Firegrate in each boiler **45 Sq. Ft.** No. and Description of Safety valves to each boiler **One Cockburn Morrison Twin Valve High Lift**

Area of each set of valves per boiler {per Rule **6.33 Sq. In.** as fitted **7.95 Sq. In.** Pressure to which they are adjusted **220 lbs.** Are they fitted with easing gear **Yes**

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

Smallest distance between boilers or uptakes and bunkers or woodwork **6' 0"** Is oil fuel carried in the double bottom under boilers **No**

Smallest distance between shell of boiler and tank top plating **2' 0"** Is the bottom of the boiler insulated **Yes**

Largest internal diameter of boilers **14' 6 3/16"** Length **11' 9"** over 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 rivetted** inter. **double rivetted**

Long. seams **Triple Rivetted Butt** Diameter of rivet holes in {circ. seams **1 1/2"** long. seams **1 1/2"** Pitch of rivets { **4.275"** **10 1/16"**

Percentage of strength of circ. end seams {plate **64.6** rivets **46.8** Percentage of strength of circ. intermediate seam {plate **85** rivets **93.4**

Percentage of strength of longitudinal joint {plate **85** rivets **93.4** combined **88.68** Working pressure of shell by Rules **221.2 lbs. per Sq. In.**

Thickness of butt straps {outer **1 3/32"** inner **1 7/32"** No. and Description of Furnaces in each Boiler **Three Morrison, 3'-4 1/4" dia. x 7'-7 11/16" long**

Material **O. H. Steel** Tensile strength **26 - 30 tons** Smallest outside diameter **3'-5 9/16"**

Length of plain part {top **21/32"** bottom **21/32"** Thickness of plates {crown **21/32"** bottom **21/32"** Description of longitudinal joint **Welded and rolled**

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules **230.9 lbs. per Sq. In.**

End plates in steam space: Material **O. H. Steel** Tensile strength **26 - 30 tons** Thickness **1 1/32"** Pitch of stays **21" x 21" doubler**

How are stays secured **Nuts, outside and inside, Spigotted Washers.** Working pressure by Rules **221 lbs. per Sq. In.**

Tube plates: Material {front **O.H. Steel** back **O.H. Steel** Tensile strength { **26 - 30 tons** Thickness { **1 1/32** **13/16**

Mean pitch of stay tubes in nests **9.8"** Pitch across wide water spaces **14 1/2" x 8 1/4"** Working pressure by Rules **Front-265#** **Back-252#** **265#**

Girders to combustion chamber tops: Material **O. H. Steel** Tensile strength **26 - 30 tons** Depth and Thickness of girder

at centre **10 1/4" x 2-7/8"** Plts. length as per Rule **34"** Distance apart **11"** No. and pitch of stays

in each **Three 7 5/8"** by Rules **229.3 #** Working pressure **26 - 30 tons** 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 9"** Top **7 5/8" x 11"** Are stays fitted with nuts or riveted over **Fitted with nuts**

Front plate at bottom: Material **O. H. Steel** by Rules **224#** Tensile strength **26 - 30 tons**

Thickness **1 1/32"** Lower back plate: Material **O.H. Steel** Tensile strength **26 - 30 tons** Thickness **1 1/32"**

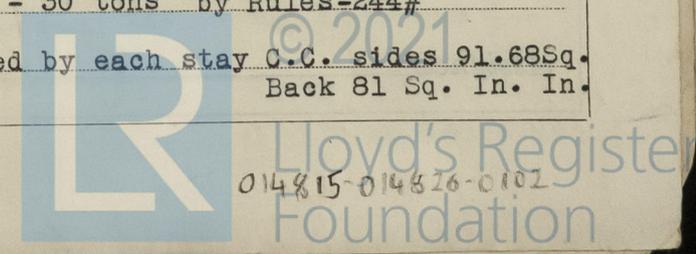
Pitch of stays at wide water space **14 1/2" x 9"** Are stays fitted with nuts or riveted over **Fitted with nuts**

Main stays: Material **O.H. Steel** by Rules **302#** Tensile strength **28 - 32 tons**

Diameter {At body of stay **3 3/4"** or **3 3/4"** No. of threads per inch **6** Area supported by each stay **441 Sq. In.**

Screw stays: Material **O.H. Steel** Tensile strength **26 - 30 tons** by Rules **244#** Working pressure

Diameter {At turned off part **Back 1 3/4"** No. of threads per inch **9** Area supported by each stay **C.C. sides 91.68 Sq. In.** **Back 81 Sq. In. In.**



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Working pressure by Rules-Back 224# C.C. Sides Margin stays: Diameter { At turned off part, or Over threads 2" }
 Are the stays drilled at the outer ends No. by Rules-Back 224# C.C. Sides Margin stays: Diameter { At turned off part, or Over threads 2" }
 No. of threads per inch 9 Area supported by each stay 75 Sq. In. Working pressure by Rules-230#
 Tubes: Material O.H. Steel External diameter { Plain 3" Stay 3" } Thickness { No. 8 L.S.G. (.160") 3/8" x 5/16" } No. of threads per inch 9
 Pitch of tubes 4 1/4 x 4 1/8 Working pressure by Rules - 236# Manhole compensation: Size of opening in Back head 12" x 16" Section of compensating ring 1 1/4" x 1/2" No. of rivets and diameter of rivet holes -
 Outer row rivet pitch at ends - Depth of flange if manhole flanged 3 3/4" Steam Dome: Material None
 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 - 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 (smoke tube) Made by others Manufacturers of { Tubes National Tube Co. Penna. Steel forgings The Superheater Co., Sherbrooke PQ Steel castings " " " " }
 Number of elements 58 Material of tubes S.D. Steel Internal diameter and thickness of tubes 69" - .095"
 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 Yes Is a safety valve fitted to every part of the superheater which can be shut off from the boiler
 Area of each safety valve .76 sq. ins. Are the safety valves fitted with easing gear -
 Pressure to which the safety valves are adjusted 220 lbs. per sq. in. Hydraulic test pressure: tubes 1500 lbs./D" forgings and castings 700 lbs./D" and after assembly in place 400 lbs./D" 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,
 Date 6th Oct. 1941
 Manufacturer John S. Heper

Dates of Survey { During progress of work in shops - - } Sept. 24, 26, 28, 29, 30. Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval) 29.4.42
 while building { During erection on board vessel } 1942 Aug. 21, Sept. 2, 5, 10, 16(2), 22, 29, Oct. 3, 8, 16, 21, 28, Nov. 7, 14, 19, 24, 30, Dec. 11, 16, 24, 1943 - Jan. 7, 13, 18, 27, Feb. 4, 10, 16, 19, 26, Mar. 3, 9, 13, 19, 24, 30 Apr. 3, 10, 15, 22, 30
 Total No. of visits 24 - All in shop. & 48 = 72
 Is this Boiler a duplicate of a previous case Yes If so, state Vessel's name and Report No. Inglis. S. Marine (N.E.M. Type) 29.4.42 N.Y.ap
 Combustion Chambers Welded

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) The boilers were built under the Special Survey of the Society's Surveyors to the Rules and requirements and in accordance with the approved plan. The materials were made at an approved works and were satisfactorily tested by the Society's Surveyors. The workmanship was good and in my opinion the boilers are eligible to be classed in this Society when they have been satisfactorily installed, seen under steam and their safety valve adjusted. NOTE All combustion chambers had welded seams as plan 168-66 approved N.Y. 29.4.42. The boilers were tested to a hydrostatic pressure of 380 lbs. and were approved and stamped:

Boiler No. 4380	Boiler No. 4381	Boiler No. 4382
LLOYDS TEST 898	LLOYDS TEST 899	LLOYDS TEST 903
T.P. 380 lbs.	T.P. 380 lbs.	T.P. 380 lbs.
W.P. 220 lbs.	W.P. 220 lbs.	W.P. 220 lbs.
J.B.F. 10.10.42.	J.B.F. 22.10.42.	J.B.F. 28.10.42.

Spares (1-set of 3 boilers) 1 Main check valve lid, 184 Firebars, 1 doz. water gauge glasses 2 doz. washers for glasses, 2 spare seats and spindles for water gauges, 15 plain tubes, 3 stay tubes for each size fitted, 9 manhole gaskets, 1 spanner for manhole doors, 2 each right and left side bars, 2 each right, left and center dead plates, 2 each right and left back bearer plates, 2 bridge plates, 2 bottom plates, Metal patterns for the following - 3 firebars, 1 right dead plate, 1 left dead plate, 1 center, 1 bridge plate, 1 bridge bottom plate, 1 right back bearer plate, 1 left back bearer plate, 1 right side bar, 1 left side bar.
 Note:--During sea trials it was observed that the majority of the longitudinal through stays were leaking. The Boilers were allowed to cool down, pumped out, the stay examined, stemmed with soft iron, caulked, welded and nuts hardened up. After testing hydrostatically to 380 lbs. steam was raised to working pressure and all Boilers were found to be tight and satisfactory.

Survey Fee \$ 150.00 When applied for, Feb. 21 1943
 Travelling Expenses (if any) \$ 10.00 When received, 19 ..

Jas B Fisher & D. Galley
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute
 Assigned

