

Rpt. 4.

REPORT ON MACHINERY.

No. 307-2179

Received at London Office

30 AUG 1930

Date of writing Report Mar 14 1930 When handed in at Local OfficePort of Toronto, Ont.No. in Survey held at Collingwood, Ont.Date, First Survey Dec. 10, 1928 Last Survey Mar. 12 1930

Reg. Book.

(Number of Visits 39/73.)on the Steel Twin Screw Ice Breaking Steamer "N.B. McLEAN"Tons { Gross 335.4
Net 112.6Master S. Balcom Built at Halifax, N.S. By whom built Halifax Shipyards, Ltd. When built 1930Engines made at Collingwood, Ont. By whom made Collingwood Shipyards, Ltd. when made 1930Boilers made at Collingwood, Ont. By whom made Collingwood Shipyards, Ltd. when made 1929Registered Horse Power 500 Owners. Canadian Government Port belonging to OttawaNom. Horse Power as per Section 28 1030 1033 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted YesENGINES, &c.—Description of Engines Twin Triple Expansion Recip. No. of Cylinders Three No. of Cranks ThreeDia. of Cylinders 27 1/2" - 43" - 70" Length of Stroke 42" Revs. per minute 105 Dia. of Screw shaft 16 1/2" Material of O.H. SteelIs the screw shaft fitted with a continuous liner the whole length of the stern tube yes Is the after end of the liner made water tightin the propeller boss Yes If the liner is in more than one length are the joints burned ✓ If the liner does not fit tightly at the partbetween the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive ✓ If twoliners are fitted, is the shaft lapped or protected between the liners ✓ Length of stern bush 6' 6"Dia. of Tunnel shaft 14" Dia. of Crank shaft journals 15" Dia. of Crank pin 15 1/4" Size of Crank webs 10 1/2" x 28 1/2" Dia. of thrust shaft undercollars 15" Dia. of screw 14' - 6" Pitch of Screw 18' - 0" No. of Blades 4 State whether moveable yes Total surface 76' 4"No. of Feed pumps 2 Diameter of ditto 17 1/2" Stroke 24" Can one be overhauled while the other is at work YesNo. of Bilge pumps 2 Diameter of ditto 8" Stroke 8" Can one be overhauled while the other is at work YesNo. of Donkey Engines 4 Sizes of Pumps 1-14" x 12" 2-4 1/2" x 5" 2-4 1/2" x 5" 2-4 1/2" x 5" No. and size of Suctions connected to both Bilge and Donkey pumpsIn Engine Room 4-4" 8-3" In Holds, &c. 2-4" 4-3"No. of Bilge Injections 2 sizes 9" Connected to condenser or to circulating pump Yes Is a separate Donkey Suction fitted in Engine room & size Yes 3"Are all the bilge suction pipes fitted with roses Yes Are the roses in Engine room always accessible Yes Are the sluices on Engine room bulkheads always accessible ✓Are all connections with the sea direct on the skin of the ship All kept 2 inches in Are they Valves or Cocks BothAre 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 AboveAre 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 YesWhat pipes are carried through the bunkers None How are they protected ✓Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times YesAre the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges YesIs the Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from Upper DeckBOILERS, &c.—(Letter for record #(S) Manufacturers of Steel Walth Steel Co., Claymont, Del., & Lukens Steel Co., Coatesville, Pa.Total Heating Surface of Boilers 2740 Is Forced Draft fitted yes No. and Description of Boilers Six, Scotch marine, 6 SBWorking Pressure 185 # Tested by hydraulic pressure to 370 # Date of test 10-8-29 No. of Certificate 220 to 225 incl.Can each boiler be worked separately Yes Area of fire grate in each boiler 69' 4" No. and Description of Safety Valves toeach boiler One 3 3/4" double Spring Area of each valve 22' 4" Pressure to which they are adjusted 180 lb Are they fitted with easing gear yesSmallest distance between boilers or uptakes and bunkers 18" Mean dia. of boilers 15' - 6" 10. Length 11' - 6" 0.H. Material of shell plates O.H. SteelThickness 1 5/16" Range of tensile strength 28 to 32 tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams 3 1/8" pitchlong. seams Double riv. Diameter of rivet holes in long. seams 1 7/16" Pitch of rivets 4 1/4" staggered Lap of plates or width of butt straps 19 1/2"Per centages of strength of longitudinal joint 84.7 Working pressure of shell by rules 185.2 # Size of manhole in shell 12" x 16"Size of compensating ring 36" x 32" x 1 7/16" No. and Description of Furnaces in each boiler 3 Morrison Material O.H. steel Outside diameter 52 3/4"Length of plain part top 58" bottom 58" Thickness of plates 58" Description of longitudinal joint Welded No. of strengthening rings ✓Working pressure of furnace by the rules 185.2 Combustion chamber plates: Material O.H. steel Thickness: Sides 1 1/16" Back 1 1/16" Top 1 1/16" Bottom 7/8"Pitch of stays to ditto: Sides 7 1/2" x 8 1/2" Back 7 1/2" x 8 1/2" Top 7 1/2" x 9" If stays are fitted with nuts or riveted heads nuts elsewhere Working pressure by rules 240 #Material of stays O.H. steel Area at smallest part 1.41' 4" Area supported by each stay 67 1/2' 4" Working pressure by rules 185.7 End plates in steam space:Material O.H. steel Thickness 1 3/32" Pitch of stays 16" x 18 1/2" How are stays secured and threaded into plate Working pressure by rules 185.5 # Material of stays O.H. steelArea at smallest part 5.412' 4" Area supported by each stay 296' 4" Working pressure by rules 200 # Material of Front plates at bottom O.H. steelThickness 1 3/16" Material of Lower back plate O.H. steel Thickness 1 3/16" Greatest pitch of stays 14 5/8" x 8 3/4" Working pressure of plate by rules 185 #Diameter of tubes 2 1/2" 0.H. Pitch of tubes 3 7/8" x 3 3/4" Material of tube plates O.H. steel Thickness: Front 1 3/16" Back 3/4" Mean pitch of stays 8 1/8"Pitch across wide water spaces 13 1/2" Working pressures by rules 191 # Girders to Chamber tops: Material O.H. steel Depth andthickness of girder at centre 10" x 1 1/2" dfl. plat. Length as per rule 2' - 8 1/16" Distance apart 9' 0" Number and pitch of stays in each three 7 1/2" pitchWorking pressure by rules 232 # Steam dome: description of joint to shell none % of strength of joint ✓Diameter ✓ Thickness of shell plates ✓ Material ✓ Description of longitudinal joint ✓ Diam. of rivet holes ✓Pitch of rivets ✓ Working pressure of shell by rules ✓ Crown plates ✓ Thickness ✓ How stayed ✓SUPERHEATER. Type ✓ Date of Approval of Plan ✓ 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 ✓Diameter of Safety Valve ✓ Pressure to which each is adjusted ✓ Is Easing Gear fitted ✓

0810 - 727800 - 07800

If so, is a report now forwarded?

The foregoing is a correct description,
Collingwood Shipyards, Limited

John S. Leitch
Vice-President

Manufacturer.

ice-President.

1928-Dec. 10, 1929-Jan. 4, 29, Feb. 11, Mar. 11, 22, Apr. 3, May 13, June 6, 11, 13, 15, July 5, 11, 25.

Dates { During progress of work in shops -- Aug. 3, 9, 10, 15, 30, Sep. 13, 24, Oct. 4, 14, 17, 22, 25, 26, Nov. 5, 27, Dec. 12, 17, 1930, Jan. 7, 22.

of Survey { During erection on board vessel -- Feb. 1, 12, 24, 28, Mar. 12,

while { Apr. 14, 15, 17, 21, 22, 24, 25, 26, 28, 31, May 1, 2, 4, 7, 11, 14, 16, 17, 22, 24, 28, 30, May 1, 2, 5, 6, 7, 9, 12, 14, 16, 19, 20, 22, 24, 26, 28, 30, June 2, 3, 4, 5, 6, 9, 11, 14, 16, 18, 19, 20, 24, 25, July

building { board vessel -- 4, 7, 8, 14, 17, 18, 19, 21, 22, 25, 23, 26, 28, 29, 30, 31, Aug. 1, 2, 5, 6, 7, 8

Total No. of visits 39 — 73

Is the approved plan of main boiler forwarded herewith

Cd. affiance
H. H. H. H.

Jan. 7.22 *Jan. 7.22* " " donkey " *Jan. 7.22*

Dates of Examination of principal parts—Cylinders *Feb. 1.12* Slides *Feb. 1.12* Covers *Feb. 1.12.24* Pistons *Feb. 1.12* Rods *Jan. 7.22*

Connecting rods *Feb. 1.12.24* Crank shaft *Feb. 1.12.24* Thrust shaft *Feb. 1.12.24* Tunnel shafts *Nov. 5* Screw shafts *Nov. 5* Propeller *July 12-14-15^X*

Stern tube *Nov. 5* Steam pipes tested *May 6-7-22^{K K L}* Engine and boiler seatings *July 15-23^L* Engines holding down bolts *July 8^K*

Completion of pumping arrangements *July 17^H* Boilers fixed *May 28^H* Engines tried under steam *July 17-18-21-25^H*

Completion of fitting sea connections *June 23rd* Stern tubes *June 11^H* Screw shaft and propeller hub *July 10^H*

Main boiler safety valves adjusted *July 19^H* Thickness of adjusting washers For Port A *F 1/8*, For Star A *F 1/8*, C Port A *F 15/32*, C Star A *F 1/2*, A Port A *F 1/2*, A Star A *F 9/16*

Material of Crank shaft *steel* Identification Mark on Do. *LLOYDS 1625 1816* Material of Thrust shaft *steel* Identification Mark on Do. *LLOYDS 1618 1619*

Material of Tunnel shafts *steel* Identification Marks on Do. *LLOYDS 1736* Material of Screw shafts *steel* Identification Marks on Do. *LLOYDS 1627 1628 1700*

Material of Steam Pipes *Steel* Test pressure *540 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 *20* of the Rules been complied with *Yes*

Is this machinery duplicate of a previous case *✓* If so, state name of vessel *✓*

General Remarks (State quality of workmanship, opinions as to class, &c. The main engines and six main boilers)
were constructed under the Special Survey of the Society's Surveyor to the requirements of the Rules, and in accordance with the approved plans. The workmanship was satisfactory, and the materials sound and tested to the satisfaction of the Society's Surveyors. The auxiliary machinery and propellers which were supplied by the Collingwood Shipyards, but made by others, were shipped direct to the Halifax Shipyards, and were not seen by the undersigned.
In my opinion the main engines and boilers are eligible to be classed + LMC. with date when the machinery is installed on board to the satisfaction of the Society's Surveyor.

The engines and auxiliary machinery have been satisfactorily installed on board and tried under steam with satisfactory results. Speed and endurance trials were given the vessel and machinery, the machinery opened up afterwards for inspection and found satisfactory and necessary adjustments made. The requirements of Section 20 of the Rules for the burning of oil fuel have been complied with and the machinery is, in my opinion, eligible to receive the record of H L MC 8-30 , fitted for oil fuel 8-30, F.P. above 150°F .

The amount of Entry Fee	£ 30	When applied for,
Special Fee	£ 628	Aug. 9 1930
Electric Light	£ 225	
Donkey Boiler Fee	£ :	When received,
Travelling Expenses (if any)	£ 260	15. 10. 1930
" " Halifax	£ 50	S. A. fees 140
		Secret Sur 110

Committee's Minute

FRI. 19 SEP 1930

Committee's Minute

Assigned

+ L.M.C. 8.30 C.L.F.D.
Fitted for oil fuel 8.30 F.P. above 150°F.

John Stephen Moon
(Engineer Surveyor to Lloyd's Register of Shipping.)

0% **LR** **CERTIFICATE WRITTEN**

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Foundation