

## REPORT ON MACHINERY.

No. 22

REC'D NEW YORK

Nov. 10, 1916

Received at London Office

Nov. 20, 1916

Date of writing Report 18. 10. 1916 When handed in at Local Office 23. 10. 1916 Port of DETROIT, MICH.  
 No. in Survey held at DETROIT AND ECORSE Date, First Survey April 26 Last Survey Oct. 16 1916  
 Reg. Book. on the STEEL SINGLE SCREW STEAMER "P. L. M. No. 5" (Number of Vents 29) Gross 2639 Net 1325

Master Built at ECORSE, MICH. By whom built GREAT LAKES ENGINEERING WORKS. When built 1916.

Engines made at DETROIT, MICH. By whom made GREAT LAKES ENGINEERING WORKS. when made 1916.

Boilers made at TOLEDO, OHIO. By whom made THE MARNE BOILER WORKS COY. when made 1916.

Registered Horse Power Owners ORIENTAL STEAM NAV'G CO. Port belonging to MONTEVIDEO.

Nom. Horse Power as per Section 28 284. Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted YES.

ENGINES, &c.—Description of Engines TRIPLE EXPANSION No. of Cylinders 3 No. of Cranks 3

No. of Cylinders 21 "3 1/2" x 5 1/4" Length of Stroke 42" Revs. per minute Dia. of Screw shaft as per rule 11 1/2" Material of screw shaft STEEL

Is 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 tight

the propeller boss YES If the liner is in more than one length are the joints burned If the liner does not fit tightly are the joints

between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive If two

liners are fitted, is the shaft lapped or protected between the liners Length of stern bush 51"

Dia. of Tunnel shaft as per rule 10 7/8" Dia. of Crank shaft journals as per rule 11 1/4" Dia. of Crank pin 1 1/4" Size of Crank webs 2 x 8" Dia. of thrust shaft under

collars 1 1/4" Dia. of screw 13-6" Pitch of Screw 14-6" No. of Blades 4 State whether moveable YES Total surface 64 1/2 sq ft

No. of Feed pumps 2 Diameter of ditto Stroke 12" Can one be overhauled while the other is at work YES

No. of Bilge pumps 2 Diameter of ditto 3 1/2" Stroke 12" Can one be overhauled while the other is at work YES

No. of Donkey Engines 3 Sizes of Pumps 6 x 4 x 6" No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 2-4" 1-3" 4 x 3 1/2 x 5 1/2" In Holds, &c. No. 1 HOLD 2-3" No. 2 HOLD 2-3"

No. of Bilge Injections / sizes 6" Connected to condenser, or to circulating pump PUMP 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 NONE

Are all connections with the sea direct on the skin of the ship MAIN INT. & BALL. SEACOCKS ON TANK TOP Are they Valves or Cocks BOTH

Are 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 ABOVE

Are 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 YES

What pipes are carried through the bunkers How are they protected

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times YES

Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges YES

Dates of examination of completion of fitting of Sea Connections 23. 8. 16 of Stern Tube 23. 8. 16 Screw shaft and Propeller 23. 8. 16

Is the Screw Shaft Tunnel watertight Is it fitted with a watertight door worked from

OILERS, &c.—(Letter for record S.) Manufacturers of Steel WORTH BROTHERS COMPANY.

Total Heating Surface of Boilers 4160 sq ft Is Forced Draft fitted YES No. and Description of Boilers 2 SINGLE ENDED

Working Pressure 175 LBS. Tested by hydraulic pressure to 263 LBS. Date of test 8. 9. 16 No. of Certificate 18

Can each boiler be worked separately YES Area of fire grate in each boiler 52 sq ft No. and Description of Safety Valves to

each boiler 2- SPRING LOADED Area of each valve 9.621 sq in Pressure to which they are adjusted 175 LBS. Are they fitted with easing gear YES

Smallest distance between boilers or uptakes and bunkers or woodwork 6" INTERNAL Mean dia. of boilers 13-6" Length 11-0" Material of shell plates S

Thickness 1 1/2" Range of tensile strength 28-32 Are the shell plates welded or flanged No. Descrip. of riveting: cir. seams S. R. L.

long. seams TR. D. B. S. Diameter of rivet holes in long. seams 1 1/2" Pitch of rivets 7 1/4" Lap of plates or width of butt straps 1 1/2"-17 1/2"

Per centages of strength of longitudinal joint rivets 84.03 Working pressure of shell by rules 180 LBS. Size of manhole in shell 11" x 15"

Size of compensating ring 22" x 33" No. and Description of Furnaces in each boiler 3- CORRUG 2 Material S Outside diameter 44 1/4"

Length of plain part top 11" Thickness of plates crown 3 1/2" Description of longitudinal joint WELD No. of strengthening rings 1

Working pressure of furnace by the rules 185 Combustion chamber plates: Material S Thickness: Sides 5/8" Back 5/8" Top 5/8" Bottom 5/8"

Pitch of stays to ditto: Sides 7 1/2" x 7 1/2" Back 7 1/2" x 7 1/2" Top 8" x 7 1/2" If stays are fitted with nuts or riveted heads R. H. Working pressure by rules 177

Material of stays S Diameter at smallest part 1 1/2" Area supported by each stay 16 1/2 sq in Working pressure by rules 179 End plates in steam space

Material S Thickness 1 1/4" Pitch of stays 16" x 16" How are stays secured D. N. Working pressure by rules 180 Material of stays S

Diameter at smallest part 2 1/2" Area supported by each stay 256 sq in Working pressure by rules 219 Material of Front plates at bottom S

Thickness 3/4" Material of Lower back plate S Thickness 5/8" Greatest pitch of stays 1 1/2" x 4 1/2" Working pressure of plate by rules 190

Diameter of tubes 2 1/4" Pitch of tubes 3 1/2" x 3 1/2" Material of tube plates S Thickness: Front 3/4" Back 5/8" Mean pitch of stays 7 1/2"

Pitch across wide water spaces 13 1/4" Working pressures by rules 178 Girders to Chamber tops: Material S Depth and

thickness of girder at centre 8 1/4" x 1 1/2" Length as per rule 3 1/2" Distance apart 8" Number and pitch of stays in each 3-7 1/2"

Working pressure by rules 202 Superheater or Steam chest; how connected to boiler Can the superheater be shut off and the boiler worked

separately Diameter Length Thickness of shell plates Material Description of longitudinal joint Diam. of rivet

holes Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness

If stiffened with rings Distance between rings Working pressure by rules End plates: Thickness How stayed

Working pressure of end plates Area of safety valves to superheater Are they fitted with easing gear



IS A DONKEY BOILER FITTED? *No.*

If so, is a report now forwarded? ☒

SPARE GEAR. State the articles supplied:— *Two wedges and studs for connecting rod top end; two connecting rod bottom end bolts and nuts, two main bearing bolts and nuts, one set of coupling bolts, one set of feed and bilge pump valves, one set of piston springs, a quantity of assorted bolts and nuts, iron of various sizes.*

The foregoing is a correct description.

*Manufacturer.*

Dates of Survey while building { During progress of work in shops - - April 16. May 16. June 1. 7. 10. 13. 16. 26. July 6. 7. 12. 20. 21. Augt. 2. 8. 9. 14. 15.  
During erection on board vessel - - Augt. 17. 23. 28. Sept. 2. 13. 18. 25. Oct. 5. 6. 16.  
Total No. of visits *29.*

Is the approved plan of main boiler forwarded herewith *YES.*

" " " donkey " " " ☒

Dates of Examination of principal parts—Cylinders *13. 6. 16* Slides *12. 7. 16* Covers *13. 6. 16* Pistons *12. 7. 16* Rods *12. 7. 16*  
Connecting rods *6. 5. 16* Crank shaft *12. 7. 16* Thrust shaft *21. 7. 16* Tunnel shafts *✓* Screw shaft *15. 8. 16* Propeller *15. 8. 16*  
Stern tube *15. 8. 16* Steam pipes tested *6. 10. 16* Engine and boiler seatings *23. 8. 16* Engines holding down bolts *25. 9. 16*  
Completion of pumping arrangements *16. 10. 16* Boilers fixed *25. 9. 16* Engines tried under steam *16. 10. 16*  
Main boiler safety valves adjusted *16. 10. 16* Thickness of adjusting washers *Std. B.R. 1" For 1 1/2" Aft. P.B. 1 1/2" For 2" A 1 1/2"*  
Material of Crank shaft *S.* Identification Mark on Do. *T.G. 2. 9. 16* Material of Thrust shaft *S.* Identification Mark on Do. *T.G. 2. 9. 16*  
Material of Tunnel shafts *✓* Identification Marks on Do. *✓* Material of Screw shafts *S.* Identification Marks on Do. *T.G. 2. 9. 16*  
Material of Steam Pipes *Solid drawn steel.* Test pressure *525 LBS. HYDRAULIC.*

Is an installation fitted for burning oil fuel? *No.*

Is the flash point of the oil to be used over 150°F. ☒

Have the requirements of Section 49 of the Rules been complied with? ☒

Is this machinery duplicate of a previous case? *YES.* If so, state name of vessel *S/S "P.L.M. No 4"*

General Remarks (State quality of workmanship, opinions as to class, &c. *The engines and boilers of this vessel have been constructed under special survey in accordance with the Rules. The materials and workmanship are sound and good. The boilers tested by hydraulic pressure and with the engines secured on board, tested under steam, they are now in good order and safe working condition and respectfully submitted as being eligible in my opinion to be placed with the notation of *✓ L.M.C 10. 16* in the Register Book.*

It is submitted that  
this vessel is eligible for  
THE RECORD + L.M.C 10. 16.

The amount of Entry Fee ... £ *10. 00.* When applied for,  
Special ... £ *14. 00.* Oct. 21. 1916  
Donkey Boiler Fee ... £ *11. 60.* When received, *✓*  
Travelling Expenses (if any) £ *11. 60.* *28. 11. 16*

Committee's Minute *New York NOV 16 1916*

Assigned *+ L.M.C 10. 16*

Engineer-Surveyor to Lloyd's Register of British & Foreign Shipping.



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Foundation