

# REPORT ON MACHINERY.

Port of SAN FRANCISCO,

Received at London Office FRI. DEC. 24. 1915

No. in Survey held at San Francisco, Date, first Survey June 17th Last Survey Nov. 24th 1915

Reg. Book.

(Number of Visits 35)

on the Union Iron Works Co's Hull No. 119, s/s "PACIFIC"

Master E. Hille Built at San Francisco By whom built Union Iron Works Company Tons <sup>Gross</sup> 6034 <sub>Net</sub> 4381 When built 1915

Turbines Engines made at Schenectady, NY. By whom made General Electric Company. when made 1915

Boilers made at San Francisco, By whom made Union Iron Works Co. when made 1915

Registered Horse Power 498 NHP Owners Atkieselskabet Dampskib Pacific Port belonging to Bergen, Norway.  
Vilhelm Torkildsen, Mngr.

Nom. Horse Power as per Section 28 2400 Is Refrigerating Machinery fitted for cargo purposes - Is Electric Light fitted yes

## ENGINES, &c.—Description of Engines

Geared Turbines

No. of Cylinders -

No. of Cranks -

Dia. of Cylinders - Length of Stroke - Revs. per minute 90 Dia. of Screw shaft <sup>as per rule</sup> 13.69 Material of steel  
<sub>as fitted</sub> 14" <sub>screw shaft</sub>

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 in the propeller boss yes If the liner is in more than one length are the joints burned yes If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive yes If two liners are fitted, is the shaft lapped or protected between the liners - Length of stern bush 4'9"

Dia. of Tunnel shaft <sup>as per rule</sup> 12.3113 Dia. of Crank shaft journals <sup>as per rule</sup> - Dia. of Crank pin - Size of Crank webs - Dia. of thrust shaft under collars 14" Dia. of screw 16'6" Pitch of Screw 14'0" No. of Blades 4 State whether moveable yes Total surface 69

No. of Feed pumps 2 DeLaval Turbine 3-stage Can one be overhauled while the other is at work yes  
Diameter of ditto - Stroke -

No. of Bilge pumps 1 Duplex 12-8 1/2-12 1-Ballast Pump, Duplex 12-10 1/2-12 Can one be overhauled while the other is at work yes  
Diameter of ditto 6x5 1/2-6 Stroke -

No. of Donkey Engines - Sizes of Pumps - No. and size of Suctions connected to both Bilge and Donkey pumps  
In Engine Room 4-3 1/2" In Holds, &c. FP 1-4"; #1 hold 2-3 1/2"; #2, 2-3 1/2";

Deep Tank 2-3 1/2"; #3 hold 2-3 1/2"; #4 hold 2-3 1/2"; After well 1-3 1/2"; After peak 1-3 1/2";

No. of Bilge Injections 1 sizes 9" Connected to condenser for circulating pump yes Is a separate Donkey Suction fitted in Engine room of size yes -4"

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 yes Are they Valves or Cocks valves

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 below

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 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 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 Sept. 1 of Stern Tube Sept. 1 Screw shaft and Propeller Sept. 1

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

## OILERS, &c.—(Letter for record (S)) Manufacturers of Steel Lukens Steel Co.

Total Heating Surface of Boilers 8055 <sup>sq. ft.</sup> Is Forced Draft fitted no No. and Description of Boilers 3-single end tubular

Working Pressure 210 Tested by hydraulic pressure to 315 Date of test Aug 30-Sep 7. No. of Certificate 9, 10, 11.

Can each boiler be worked separately yes Area of fire grate in each boiler - oil fuel No. and Description of Safety Valves to each boiler 2-Spring loaded Area of each valve 9.6 Pressure to which they are adjusted 215 Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork - Mean dia. of boilers 14'10 1/2" Length 11' Material of shell plates steel

Thickness 1 1/8" Range of tensile strength 28 32 Are the shell plates welded or flanged no Descrip. of riveting: cir. seams d.r. long. seams Tr. d. b. Diameter of rivet holes in long. seams 1-9/16 Pitch of rivets 10" Lap of plates or width of butt straps 22" 1/8

Percentages of strength of longitudinal joint <sup>rivets</sup> 95% Working pressure of shell by rules 228 Size of manhole in shell head 12x16 <sub>plate</sub> 84.4%

Size of compensating ring flanged No. and Description of Furnaces in each boiler 3-Mor. Cor. Material steel Outside diameter 48 1/16

Length of plain part <sup>top</sup> - Thickness of plates <sup>or on</sup> 21/32 Description of longitudinal joint - weld No. of strengthening rings - <sub>bottom</sub>

Working pressure of furnace by the rules 222 Combustion chamber plates: Material steel Thickness: Sides 11/16 Back 11/16 Top 11/16 Bottom 7/8

Pitch of stays to ditto: Sides 8x6 3/4 Back 8x7 Top 8x6 3/4 If stays are fitted with nuts or riveted heads rivet heads Working pressure by rules 235

Material of stays steel Diameter at smallest part 1.755 Area supported by each stay 56sq. in. Working pressure by rules 250 End plates in steam space: Material steel Thickness 1 1/4" Pitch of stays 16 3/8 x 17 1/2 How are stays secured dbl. nuts Working pressure by rules 243 Material of stays steel

Diameter at smallest part 3 1/4 Area supported by each stay 287 Working pressure by rules 300 Material of Front plates at bottom steel Thickness 13/16 Material of Lower back plate Steel Thickness 13/16 Greatest pitch of stays 8x7 Working pressure of plate by rules 250

Diameter of tubes 3 Pitch of tubes 4 1/8 x 4 Material of tube plates steel Thickness: Front 13/16 Back 13/16 Mean pitch of stays 10.2

Pitch across wide water spaces 13 Working pressures by rules 268 Girders to Chamber tops: Material steel Depth and thickness of girder at centre 12x1 1/2 Length as per rule 34" Distance apart 8" Number and pitch of stays in each 4-6 3/4

Working pressure by rules 339 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 - 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 -

W67-0167



**VERTICAL DONKEY BOILER—** Manufacturers of Steel

No. \_\_\_\_\_ Description \_\_\_\_\_  
 Made at \_\_\_\_\_ By whom made \_\_\_\_\_ When made \_\_\_\_\_ Where fixed \_\_\_\_\_  
 Working pressure tested by hydraulic pressure to \_\_\_\_\_ Date of test \_\_\_\_\_ No. of Certificate \_\_\_\_\_ Fire grate area \_\_\_\_\_ Description of Safety \_\_\_\_\_  
 Valves \_\_\_\_\_ No. of Safety Valves \_\_\_\_\_ Area of each \_\_\_\_\_ Pressure to which they are adjusted \_\_\_\_\_ Date of adjustment \_\_\_\_\_  
 If fitted with easing gear \_\_\_\_\_ If steam from main boilers can enter the donkey boiler \_\_\_\_\_ Dia. of donkey boiler \_\_\_\_\_ Length \_\_\_\_\_  
 Material of shell plates \_\_\_\_\_ Thickness \_\_\_\_\_ Range of tensile strength \_\_\_\_\_ Descrip. of riveting long. seams \_\_\_\_\_  
 Dia. of rivet holes \_\_\_\_\_ Whether punched or drilled \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Lap of plating \_\_\_\_\_ Per centage of strength of joint \_\_\_\_\_ Rivets \_\_\_\_\_ Plates \_\_\_\_\_  
 Working pressure of shell by rules \_\_\_\_\_ Thickness of shell crown plates \_\_\_\_\_ Radius of do. \_\_\_\_\_ No. of stays to do. \_\_\_\_\_ Dia. of stays \_\_\_\_\_  
 Diameter of furnace Top \_\_\_\_\_ Bottom \_\_\_\_\_ Length of furnace \_\_\_\_\_ Thickness of furnace plates \_\_\_\_\_ Description of joint \_\_\_\_\_  
 Working pressure of furnace by rules \_\_\_\_\_ Thickness of furnace crown plates \_\_\_\_\_ Stayed by \_\_\_\_\_  
 Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_ Dates of survey \_\_\_\_\_

**SPARE GEAR.** State the articles supplied:— 1-tail shaft complete with nut. 1-propeller blade.  
 50-condenser tubes. 1-set of coupling bolts for line shaft. 40-boiler tubes.  
 1-set of Turbine shaft bearing brasses. 1-set of turbine shaft thrust collars.  
 1-emergency governor. 1-set bilge pump valves. Assorted bolts & nuts and bar iron.

The foregoing is a correct description,  
**UNION IRON WORKS COMPANY,**

By *John A. Stewart* Manufacturer.

*Centrifugal feed pumps.*

Dates of Survey while building  
 During progress of work in shops - - Boilers: June 17; July 6, 9, 13, 29 Sept 2  
 During erection on board vessel - - Boilers: April 13. May 10, 11, 18, 25 June 22 July 6, 20, 26 Aug. 11, 16, 17, 23, 24, 20 Sept. 1-7.  
 Engines: Sept. 1, 6, 13, Oct 15 Nov. 1, 4, 9, 10, 18, 19  
 Boilers: Sept. 8, 10 Oct. 16 Nov. 18-24  
 Total No. of visits 35. Is the approved plan of main boiler forwarded herewith  yes

Dates of Examination of principal parts—Cylinders - Slides - Covers - Pistons - Rods -  
 Connecting rods - Crank shaft - Thrust shaft July 9 Tunnel shafts July 9 Screw shaft July 29 Propeller July 2  
 Stern tube July 9 Steam pipes tested Sept. 1 Engine and boiler seatings Aug. 17 Engines holding down bolts Nov. 21  
 Completion of pumping arrangements Nov. 18 Boilers fixed Oct. 16 Engines tried under steam Nov. 18 & 21  
 Main boiler safety valves adjusted Nov 24 Thickness of adjusting washers lock nuts. 35  
 Turbine Identification Mark on Do. Material of Thrust shaft steel Identification Mark on Do. 9-7-15  
 Material of Crank shaft - Identification Mark on Do. Material of Screw shafts steel Identification Marks on Do. 1298 a  
 Material of Tunnel shafts steel Identification Marks on Do. 1298 a  
 Material of Steam Pipes steel Test pressure 630? WHS 9-7-15

**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
 This vessel is fitted with Curtis Geared Turbines. The Machinery and Boilers were constructed under Special Survey, of materials tested to Rule requirements. Workmanship is sound throughout. On completion the machinery was thoroughly tested under working conditions and worked satisfactorily in every respect.

In the opinion of the undersigned this vessel is eligible to be classed in the Register Book with notation of \*LMC 11-15 Fitted for oil fuel 11-15 F.P. above 150°F.

The amount of Entry Fee.. £ \$ 15.00 : When applied for, Dec 2 15  
 Special .. .. £ 220.00 :  
 Donkey Boiler Fee .. .. £ : :  
 Travelling Expenses (if any) £ 2.50 : When received, 22/15

Committee's Minute 237.50 FRI. DEC. 31. 1915  
 Assigned + L.M.C. 11. 15-

*W. Stewart & J. Blackett*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping  
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 Listed for oil fuel 11.15 - F.P. above 150°F

Union Iron Works Co., San Francisco.

Certificate (if required) to be sent to the Surveyors are requested not to write on or below the space for Committee's Minute.