

# REPORT ON MACHINERY.

Port of SAN FRANCISCO,

Received at London Office THU. 13 APR. 1916

No. in Survey held at San Francisco,

Date, first Survey Oct. 9th/1915

Last Survey Mar. 8th

1916.

Reg. Book.

(Number of Visits)

on the Geared Turbine s/s "LA BREA", Union Iron Wks. Co's Hull No. 122

Tons } Gross 6945  
Net 4257

Master T.A. Grant.

Built at San Francisco,

By whom built Union Iron Works Co.

When built 1916.

Turbines

Engines made at Schenectady, NYk. By whom made General Electric Co.

when made 1915

Boilers made at San Francisco,

By whom made Union Iron Works Co.

when made 1916.

Shaft

Registered Horse Power 2600

Owners Union Oil Co. of California.

Port belonging to San Francisco.

Nom. Horse Power as per Section 28

Is Refrigerating Machinery fitted for cargo purposes no

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 13.53 Material of 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

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 - If two

liners are fitted, is the shaft lapped or protected between the liners - Length of stern bush 5'8 1/2"

Dia. of Tunnel shaft 13.28 Dia. of Crank shaft journals - Dia. of Crank pin - Size of Crank webs - Dia. of thrust shaft under

collars 14.75 Dia. of screw 16'6" Pitch of Screw 14'0" No. of Blades 4 State whether moveable yes Total surface 77.5 sq. ft.

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

No. of Bilge pumps 2 Diameter of ditto 7 1/2 x 5 x 6 Can one be overhauled while the other is at work yes

No. of Donkey Engines 2 Sizes of Pumps 7 1/2 x 5 x 6 No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 4-3 1/2" In Holds, &c. 1-3" in FP; 2-2 1/2" in Fore Hold; 2-2 1/2" in

cofferdam 2-2 1/2" in fore DB; 2-3 1/2" in ER tank; 2-3 1/2" in BR tank; 1-3" in A tank.

No. of Bilge Injections 1 sizes 10" Connected to condenser, or to circulating pump yes Is a separate Donkey Suction fitted in Engine room of size yes, 3 1/2"

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 yes

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 yes

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 Dec. 16th/15 Stern Tube Dec. 16/15 Screw shaft and Propeller Feb. 4/16

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

## BOILERS, &c.—(Letter for record (S)) Manufacturers of Steel Worth Brothers.

Total Heating Surface of Boilers 8640 sq. ft. Forced Draft fitted no No. and Description of Boilers 3-single ended, multitubular

Working Pressure 220 lbs. Tested by hydraulic pressure to 330 lbs. Date of test Dec. 21-23-27 No. of Certificate 15-16-17

Can each boiler be worked separately yes Area of fire grate in each boiler none No. and Description of Safety Valves to

each boiler 2-spring loaded Area of each valve 9.6 Pressure to which they are adjusted 220 lbs. 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 11'9" Material of shell plates steel

Thickness 1 19/32" Range of tensile strength 28/32" Are the shell plates welded or flanged no Descrip. of riveting: cir. seams d.r. lap

long. seams t.r. butt Diameter of rivet holes in long. seams 1-9/16" Pitch of rivets 10" Lap of plates or width of butt straps 22-3/8"

Per centages of strength of longitudinal joint rivets 89.25 Working pressure of shell by rules 244 Size of manhole in shell 12x16

plate 84.375 Size of compensating ring none No. and Description of Furnaces in each boiler 3-Morison Material steel Outside diameter 48'16"

Length of plain part top - Thickness of plates crown 21/32" Description of longitudinal joint - No. of strengthening rings -

bottom - Thickness of plates bottom 21/32" Working pressure of furnace by the rules 264 Combustion chamber plates: Material steel Thickness: Sides 1 1/16" Back 1 1/16" Top 1 1/16" Bottom 1 5/16"

Pitch of stays to ditto: Sides 6 3/4 x 8" Back 7 x 7 1/16" Top 6 3/4 x 8" If stays are fitted with nuts or riveted heads riv. heads Working pressure by rules 220 lbs.

Material of stays steel Diameter at smallest part 1 5/8" Area supported by each stay 54 sq. in. Working pressure by rules 337 End plates in steam space:

Material steel Thickness 1 1/4" Pitch of stays 17 1/2 x 16 3/8" How are stays secured db. nuts Working pressure by rules 242 Material of stays steel

Diameter at smallest part 7.67 Area supported by each stay 286.5 Working pressure by rules 278 Material of Front plates at bottom steel

Thickness 13/16" Material of Lower back plate steel Thickness 13/16" Greatest pitch of stays 15 Working pressure of plate by rules 252

Diameter of tubes 3 Pitch of tubes 4 1/8 x 4" Material of tube plates steel Thickness: Front 13/16" Back 7/8" Mean pitch of stays 10"

Pitch across wide water spaces 13" Working pressures by rules 236 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 345 lbs. 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 -

If not, state whether, and when, one will be sent? YES

3m.c. 1.

Lloyd's Register Foundation  
4982-0177

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 Saster \_\_\_\_\_

Valves \_\_\_\_\_ No. of Safety Valves \_\_\_\_\_ Area of each \_\_\_\_\_ Pressure to which they are adjusted \_\_\_\_\_ Date of adjustment \_\_\_\_\_

If fitted with casing 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. ✓ 2-propeller blades. ✓  
 50-condenser tubes. ✓ 1-set of coupling bolts. ✓ 1-set of turbine shaft brasses. ✓ 50-boiler tubes ✓  
 1-set of turbine shaft thrust collars. ✓ 1-set bilge pump valves. ✓ Assorted bolts, nuts & bar iron ✓

The foregoing is a correct description,  
 UNION IRON WORKS COMPANY,  
 By *Wm. A. ...* Manufacturer.

Dates of Survey while building

During progress of work in shops - -	Sept. 11	Oct. 9	Nov. 8-10-24-30	Dec. 6-14-16-21-22-23-27-30	Jan 15	Feb 18.
During erection on board vessel - -	Dec. 21-23	Jan. 3-4-5-13-17-18-20-25-26-28	Feb. 4-9-12-14-15-21-25	Mar 1-3-4-5		

Total No. of visits 39

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 Nov 30/15 Tunnel shafts - Screw shaft Jan. 15/16 Propeller Mar. 3/16

Stern tube Nov. 30/15 Steam pipes tested Feb. 18/16 Engine and boiler seatings Dec. 30/15 Engines holding down bolts Mar. 5th/16

Completion of pumping arrangements Mar. 2nd/16 Boilers fixed Jan. 17th/16 Engines tried under steam Mar. 5th/16

Main boiler safety valves adjusted Mar. 8th/16 Thickness of adjusting washers lock nuts.

Material of Turbine shafts steel Identification Mark on Do. Nos. 149-150 Material of Thrust shaft steel Identification Mark on Do. TGD-J

Material of Tunnel shafts - Identification Marks on Do. - Material of Screw shafts steel Identification Marks on Do. TGD-J

Material of Steam Pipes steel .259 ✓ Test pressure 660 lbs. ✓

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 was sound throughout. On completion the Machinery was thoroughly tested under working conditions and worked satisfactorily.

In the opinion of the undersigned the vessel is eligible to be classed in the Register Book with notation of \*LMC 3-16 Fitted for Liquid Fuel FP above 150° F.

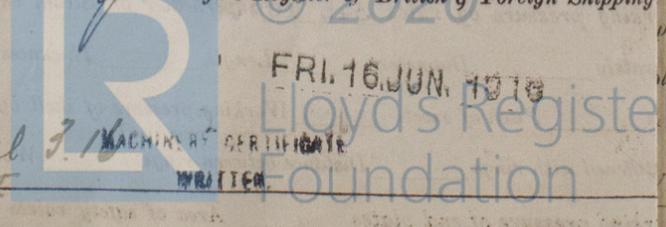
*It is submitted that this vessel is eligible for THE RECORD. + LMC 3. 16. 1 Geared Steam Turbine. Fitted for oil fuel 3. 16. F.P. above 150° F.*

*J.W.D. 26/4/16*

*J. Blackett*

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

FRI. 16 JUN. 1916



The amount of Entry Fee..	£ \$15.00	When applied for,
Special	£ 230.00	Mar. 24 1916
Donkey Boiler Fee	NYK 29.55	
	Cleveland 5.80	
Travelling Expenses (if any)	£ see NYK report herewith.	When received, April 1916

Committee's Minute

WED. 26 APR. 1916

Assigned

*+ LMC 3. 16 Fitted for oil fuel 3. 16 F.P. above 150° F.*

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