

REPORT ON MACHINERY

N.Y. No. _____

S.F. No. 2298.

Received at London Office

Port of *New York & San Francisco*

Survey held at *Schenectady* Date, First Survey *27 July 1915* Last Survey *March 8th 1916*

on the *Union Iron Works cos no 122* s/s "*LA BREA*"

Description of Sater *T.A. Grant*, Built at *San Francisco*, By whom built *Union Iron Works Co.* When built *1916.*

Engines made at *Schenectady* 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 *2600*. Owners *Union Oil Co. of California.* Port belonging to *SAN FRANCISCO.*

Is Refrigerating Machinery fitted for cargo purposes *no* Is Electric Light fitted *yes*

GINES, &c.—Description of Engines *Burtis Turbine Geared* No. of Cylinders No. of Cranks

Dia. of Cylinders Length of Stroke Revs. per minute *3552 turbins* Material of screw shaft

the screw shaft fitted with a continuous liner the whole length of the stern tube *707-2 90 propeller* Is the after end of the liner made water tight

the propeller boss If the liner is in more than one length are the joints burned 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

boiler tubes are fitted, is the shaft lapped or protected between the liners Length of stern bush

Dia. of Tunnel shaft as per rule Dia. of Crank shaft journals as per rule Dia. of Crank pin Size of Crank webs Dia. of thrust shaft under

Pitch of Screw No. of Blades State whether moveable Total surface

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

No. of Bilge pumps Diameter of ditto Stroke Can one be overhauled while the other is at work

No. of Donkey Engines Sizes of Pumps No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room In Holds, &c.

No. of Bilge Injections sizes Connected to condenser, or to circulating pump Is a separate Donkey Suction fitted in Engine room & size

Are all the bilge suction pipes fitted with roses Are the roses in Engine room always accessible Are the sluices on Engine room bulkheads always accessible

Are all connections with the sea direct on the skin of the ship Are they Valves or Cocks

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Discharge Pipes above or below the deep water line

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Are the Blow Off Cocks fitted with a spigot and brass covering plate

That 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

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

Dates of examination of completion of fitting of Sea Connections of Stern Tube Screw shaft and Propeller

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

BOILERS, &c.—(Letter for record) Manufacturers of Steel

Total Heating Surface of Boilers Is Forced Draft fitted No. and Description of Boilers

Working Pressure Tested by hydraulic pressure to Date of test No. of Certificate

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

each boiler Area of each valve Pressure to which they are adjusted Are they fitted with easing gear

Smallest distance between boilers or uptakes and bunkers or woodwork Mean dia. of boilers Length Material of shell plates

Thickness Range of tensile strength Are the shell plates welded or flanged Descrip. of riveting: cir. seams

Working pressure of shell by rules Working pressure of shell by rules Size of manhole in shell

Material Outside diameter

Length of plain part Thickness of plates Description of longitudinal joint No. of strengthening rings

Working pressure of furnace by the rules Combustion chamber plates: Material Thickness: Sides Back Top Bottom

Pitch of stays to ditto: Sides Back Top If stays are fitted with nuts or riveted heads Working pressure by rules End plates in steam space:

Material of stays Diameter at smallest part Area supported by each stay Working pressure by rules Material of stays

Material Thickness Pitch of stays How are stays secured Working pressure by rules Material of Front plates at bottom

Diameter at smallest part Area supported by each stay Working pressure by rules Working pressure of plate by rules

Thickness Material of Lower back plate Thickness Greatest pitch of stays Working pressure of plate by rules

Diameter of tubes Pitch of tubes Material of tube plates Thickness: Front Back Mean pitch of stays

Pitch across wide water spaces Working pressures by rules Girders to Chamber tops: Material Depth and

Thickness of girder at centre Length as per rule Distance apart Number and pitch of stays in each

Working pressure by rules 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

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



N.Y.K. No.

pt. 9a.

port of

New York

Continuation of Report No.

dated

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VERTICAL DONKEY BOILER—

Manufacturers of Steel

No.	Description		When made		Where fixed
Made at	By whom made				
Working pressure	tested by hydraulic pressure to	Date of test	No. of Certificate	Fire grate area	Description of
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	Radius of do.	Stayed by		
Diameter of uptake	Thickness of uptake plates	Thickness of water tubes	Dates of survey		

SPARE GEAR. State the articles supplied:—

The foregoing is a correct description,

Ed. Dickman Jr. Manufacturer. General Electric Co.

Dates of Survey: During progress of work in shops -- July 27-28 - Aug. 17 - Sep. 28 - Nov. 5 - Dec. 8 - 17 - 1915
 while building board vessel -- Aug. 4 - 1915 (Cleveland)
 Total no. of visits

Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts	Casings 8.17.00/15	Slides	Covers	Pistons	Rods
Connecting rods	shaping 8.17.00/15	Thrust shaft	Tunnel shafts	Screw shaft	Propeller
Stern tube	Steam pipes tested	Engine and boiler seatings	Engines holding down bolts		
Completion of pumping arrangements	Boilers fixed	Engines tried under steam			
Main boiler safety valves adjusted	Thickness of adjusting washers				
Material of Casings shafting	Steel	Identification Mark on Do.	Material of Thrust shaft	Identification Mark on Do.	
Material of Tunnel shafts	Identification Marks on Do.		Material of Screw shafts	Identification Marks on Do.	
Material of Steam Pipes	Test pressure				

General Remarks (State quality of workmanship, opinions as to class, &c. This installation consists of a Curtis Turbine, having 5 stages ahead and 2 stage reverse, the turbine speed being reduced by 1 stage from 3552 revolutions per minute, to a speed of 90 revolutions at the propeller.

The turbine shaft is coupled to a straight shaft, which passes through a hollow shaft the inner and outer shafts being coupled together at our end. On the hollow shaft is the high speed pinion, gearing into the gear discs fitted to straight shafts, on either side of it. Both of these shafts are coupled to straight shafts which pass through hollow shafts, the inner and outer shafts being also coupled together. On these hollow shafts are fitted the low speed

The amount of Entry Fee	£	When applied for at 5/6.
Special	£	Mar. 24. 19. 16
Donkey Boiler Fee	£	
Travelling Expenses (if any)	N.Y.K. \$29.55 Gev. \$5.80	When received, 19...

A. W. Murray

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

Committee's Minute WED. 26 APR. 1916

Assigned See minute S. Geo. J. E. R. P. No. 2298 FRI. 16 JUN. 1916

pinions which gear into the discs fitted to the slow speed shaft.

Shafting (High tensile steel)

Diameter of turbine shaft (85000)	= 6"	Rule 3.36"
do of flexible do (100000)	= 3 5/8"	do 3.2"
do of high speed shaft (110000)	= 6" with 4.125 hole	do 5.67" with 4.125 hole
do of 2nd speed do (75000)	= 6"	do 5.61"
do of 2nd flexible do (100000)	= 4.875"	do 4.33"
do hollow do (90000)	= 9" with 6" hole	do (6.8 solid) (7.797 solid = fitted)
low speed do	= 11"	do 13.4"

Bearings

Turbine shaft (head)	8" x 8"
do do (exhaust)	8" x 10"
High speed shaft	6" x 8" (2).
2nd speed do	6" x 8" (2) (2)
do do do	9" x 14" (2) (2)
Low speed do	11" x 18" (2).

Centres of bearings from centres of gears

High speed shaft	= 9 9/16"
2nd do do	= 15 5/8"
Low do do	= 17 5/8"

Gears

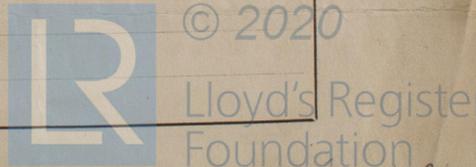
High speed pinion	6.5" pitch diameter.
do do discs	2'-8.667" do do.
Low speed pinion	10.15" do do.
do do wheel	6'-6.65" do do.

Size of bucket wheels

No 1 - 1st stage ahead	2'-9.75" outside diameter.
No 2 - 2nd do do	3'-7.375" do do
No 3 - 3rd do do	3'-8.25" do do
No 4 - 4th do do	3'-8.5" do do
No 5 - 5th do do	3'-7" do do
No 6 - 2nd do astern	2'-10.75" do do
No 7 - 1st do do	3'-1.1875" do do

Size of Buckets (height.)

No 1 -	2.469" ahead
No 2 -	2.344" do
No 3 -	2.969" do
No 4 -	4.25" do
No 5 -	7.75" do
No 6 -	2.531" 3.219" astern
No 7 -	4.969" do



3.

The casings of the turbine have been tested under water pressure to H.P. casing 350 lbs Astern casing 100 lbs and Low pressure (exhaust) 30 lbs, per sq inch and all proved good and sound.

The materials and workmanship are both of good quality.

This turbine has now been shipped to San Francisco, to be fitted on board the vessel designated No 122 building by the Union Iron Works.

Plans approved see Secy's letter 2nd September 1915.

C.W.H.