

# REPORT ON MACHINERY.

No. 2047  
SAT. SEP. 27. 1913

Port of PHILADELPHIA.

Received at London Office 19

No. in Survey held at PHILADELPHIA. Date, first Survey 10.2.13. Last Survey Aug 29. 1913

Reg. Book. 485 on the S.S. SANTA CLARA (Number of Visits 39) Tons Gross 6309.82 Net 4026.17

Master N.T. Crossley Built at PHILADELPHIA. By whom built The Wm. Camp & Sons S. E. B. C. When built 1913-8

Engines made at PHILADELPHIA. By whom made The Wm. Camp & Sons S. E. B. C. when made 1913-8

Boilers made at PHILADELPHIA. By whom made do when made 1913-8

Registered Horse Power Owners Atlantic Pacific S.S. Co Port belonging to New York

Nom. Horse Power as per Section 28 611 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

ENGINES, &c.—Description of Engines Quadruple No. of Cylinders 4 No. of Cranks 4

Dia. of Cylinders 25 1/2, 37, 57 1/2, 76 Length of Stroke 54 Revs. per minute 70 Dia. of Screw shaft as per rule 15 1/2 Material of screw shaft as fitted 16 1/4

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 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 6.02

Dia. of Tunnel shaft as per rule 14.3 Dia. of Crank shaft journals as per rule 15 Dia. of Crank pin 15 1/2 Size of Crank webs 10 1/4 x 2 1/4 Dia. of thrust shaft under

rollers 15 1/4 Dia. of screw 18.0 Pitch of Screw 18.6 No. of Blades 4 State whether moceable Yes Total surface 87 ft

No. of Feed pumps 3 independent Diameter of ditto 2 x 8 Stroke 24 Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 Diameter of ditto 4 1/2 Stroke 27 Can one be overhauled while the other is at work Yes

No. of Donkey Engines 2 Sizes of Pumps 7 1/2 x 10 1/4 x 10 x 12 x 8 x 2 1/4 No. and size of Suctions connected to both Bilge and Donkey pumps

in Engine Room 6 - 3 1/2 In Holds, &c. No 1 hold 4 - 3 1/2 No 2 hold 4 - 3 1/2

No 5 - 4 - 3 1/2 No 6 hold 2 - 3 1/2 Tunnel well 1 - 3 1/2 A. Peak 1 - 3 1/2

No. of Bilge Injections 1 sizes 10 Connected to condenser, or to circulating pump pumps As a separate Donkey Suction fitted in Engine room & 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

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

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 oil bilge stank pipes How are they protected Shut-off valves both ends.

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 2.6.13 of Stern Tube 2.6.13 Screw shaft and Propeller 2.6.13

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

MANUFACTURERS, &c.—(Letter for record S) Manufacturers of Steel D. Colville & Son, Scotland, Works 13 No. N.S.A.

Total Heating Surface of Boilers 8446 ft Is Forced Draft fitted Yes No. and Description of Boilers 3 Single ended furnaces

Working Pressure 223 lb Tested by hydraulic pressure to 335 lb Date of test July 9.13 No. of Certificate 51

Can each boiler be worked separately Yes Area of fire grate in each boiler 71.5 ft No. and Description of Safety Valves to

each boiler 2 Daniel Spring Area of each valve 12.56 Pressure to which they are adjusted 223 lb Are they fitted with easing gear Yes

Smallest distance between boilers or uptakes and bunkers on woodwork 7.0 Mean dia. of boilers 15.776 Length 12.42 Material of shell plates Steel

Thickness 1/16 Range of tensile strength 29.32 Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap, d.T.

Long. seams D.B.S.T.R Diameter of rivet holes in long. seams 1/16 Pitch of rivets 8 7/8 Lap of plates or width of butt straps 2 1/4

Percentages of strength of longitudinal joint rivets 95.0 Working pressure of shell by rules 241 lb Size of manhole in shell end 16 x 12

Size of compensating ring flange No. and Description of Furnaces in each boiler 4 Morrison Material Steel Outside diameter 43 1/4

Length of plain part top 5 Thickness of plates crown 5 Description of longitudinal joint welded No. of strengthening rings none

Working pressure of furnace by the rules 232 lb Combustion chamber plates: Material Steel Thickness: Sides 3/4 Back 3/4 Top 3/4 Bottom 3/4

Pitch of stays to ditto: Sides 7 1/2 Back 7 1/4 Top 7 1/2 If stays are fitted with nuts or riveted heads nuts Working pressure by rules 370 lb

Material of stays Steel Diameter at smallest part 1/2 Area supported by each stay 52.5 Working pressure by rules 231 lb End plates in steam space:

Material Steel Thickness 1/8 Pitch of stays 18 x 18 How are stays secured D.N.V Working pressure by rules 239 lb Material of stays Steel

Diameter at smallest part 3/4 Area supported by each stay 324 Working pressure by rules 266 lb Material of Front plates at bottom Steel

Thickness 1/16 Material of Lower back plate Steel Thickness 1/8 Greatest pitch of stays 13.5 x 7.5 Working pressure of plate by rules 367 lb

Diameter of tubes 2 3/4 Pitch of tubes 4 x 4 Material of tube plates Steel Thickness: Front 1/16 Back 1/8 Mean pitch of stays 10

Pitch across wide water spaces 14 Working pressures by rules 235 lb Girders to Chamber tops: Material Steel Depth and

thickness of girder at centre 10 x 1 1/8 Length as per rule 36 1/2 Distance apart 7 1/2 Number and pitch of stays in each 4 - 7

Working pressure by rules 242 lb Superheater or Steam chest; how connected to boiler none 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

VERTICAL DONKEY BOILER— Manufacturers of Steel Works *Worth River*

No. *1* Description *Vertical multitubular*  
 Made at *Stoudsburg* By whom made *International Boiler Works* When made *1913* Where fixed *Main deck*  
 Working pressure *100#* tested by hydraulic pressure to *150#* Date of test *26.3.13* No. of Certificate *45* Fire grate area *3.14* Description of Safety  
 Valves *1* *Direct Spring* No. of Safety Valves *1* Area of each *1.77* Pressure to which they are adjusted *100#* Date of adjustment *28.8.13*  
 If fitted with casing gear *Yes* If steam from main boilers can enter the donkey boiler *No* Inside Dia. of donkey boiler *29 1/2* Length *6.0*  
 Material of shell plates *Steel* Thickness *5/16* Range of tensile strength *28.32* Descrip. of riveting long. seams *Lap S.T.*  
 Dia. of rivet holes *13/16* Whether punched or drilled *drill* Pitch of rivets *2"* Lap of plating *2 1/2* Per centage of strength of joint *70*  
 Working pressure of shell by rules *125#* Thickness of shell crown plates *7/16* Radius of do. *flat* No. of stays to do. *tubes* Dia. of stays *1 1/2*  
 Diameter of furnace Top *24 3/8* Bottom *-* Length of furnace *21 1/2* Thickness of furnace plates *5/16* Description of joint *Lap S.T.*  
 Working pressure of furnace by rules *121#* Thickness of furnace crown plates *3/8* Stayed by *tubes all beaded*  
 Diameter of uptake tubes *2"* Thickness of uptake plates *-* Thickness of water tubes *0.05 B.R.C.* Dates of survey *March 12. 26. 1913*

SPARE GEAR. State the articles supplied:— *1 Tail Shaft. 2 propeller blades. 2 sets coupling bolts. 6 propeller studs. 1 Valve spindle. 1 Eccentric rod. 1 Thrust shoe. 1 Impeller shaft. A complete set of main and feed bilge pumps valves & fittings also a quantity of iron bolts.*

The foregoing is a correct description,  
 THE WM. CRAMP & SONS SHIP & ENGINE BUILDING CO.

*J.H. Stand* is Manufacturer. *main engine & boilers.*

Dates of Survey while building  
 During progress of work in shops— *Feb 10. 21. 27. Mar 10. 18. 27. April 9. 14. 17. 23. 29. May 8. 12. 20. 22. June 2. 5. 1913.*  
 During erection on board vessel— *June 10. 13. 16. 20. 26. 30. July 7. 9. 11. 14. 18. 23. 29. Aug 11. 14. 15. 16. 21. 22. 26. 28. 29. 1913*  
 Total No. of visits *39*

Is the approved plan of main boiler forwarded herewith *Yes*

Dates of Examination of principal parts—Cylinders *29.4.13* Slides *29.4.13* Covers *29.4.13* Pistons *26.6.13* Rods *18.4.13*  
 Connecting rods *18.4.13* Crank shaft *2.5.13* Thrust shaft *9.4.13* Tunnel shafts *9.4.13* Screw shaft *12.5.13* Propeller *2.6.13*  
 Stern tube *2.6.13* Steam pipes tested *14.8.13* Engine and boiler seatings *20.6.13* Engines holding down bolts *23.7.13*  
 Completion of pumping arrangements *26.8.13* Boilers fixed *14.7.13* Engines tried under steam *28.8.13*  
 Main boiler safety valves adjusted *28.8.13* Thickness of adjusting washers *Pol Sh P 15. S 1/2. Anti Sh P 6 S 19. Sh. N. P 2 S 5*  
 Material of Crank shaft *Steel* Identification Mark on Do. *918.R.H* Material of Thrust shaft *Steel* Identification Mark on Do. *918.R.H.*  
 Material of Tunnel shafts *-* Identification Marks on Do. *918.R.H.* Material of Screw shafts *Iron* Identification Marks on Do. *918.R.H.*  
 Material of Steam Pipes *Steel* Test pressure *450#*

General Remarks (State quality of workmanship, opinions as to class, &c.)  
*This vessel is fitted to burn liquid fuel on the three main boilers. The "Dahl System" mechanical pressure burners has been installed & found to work well. Oil fuel to have a flash point not less than 150F°*

*The machinery of this vessel has been constructed & fitted on board under Special Survey. The workmanship is sound & good throughout. The machinery has been tried under steam & found to work well which in my opinion renders the vessel eligible for the record of +LMC. 8.13. fitted for liquid fuel 8.13 in the Register Book.*

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

The amount of Entry Fee *\$ 15.00*  
 Special *\$ 277.75*  
 Donkey Boiler Fee *\$ 25.00*  
 Travelling Expenses (if any) *£ 14.00*

When applied for, *5.9.1913*  
 When received, *5/11/13*

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

Committee's Minute

TUE. SEP. 30. 1913

Assigned

*+ L.M.C. 8.13*

*F.D. Rep made. Listed for oil fuel 8.13*

