

No. 1444

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 1397 No. in Register Book 2494
ALASKA PRINCE
S.S. "CHILKOOT"

Makers of Engines Buddens Iron Foundry
Providence, R.I.

Works No.

Makers of Main Boilers Vulcan Iron Works
Vancouver, B.C.

Works No.

Makers of Donkey Boiler W

Works No. ✓

MACHINERY.



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No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. *1397* No. in Register Book *2496*

Received at Head Office *22^d October 1920.*

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the

Port of Registry *VANCOUVER, B.C.*

Registered Owners *UNION S.S. Co. of British Columbia*

Surveyor's District *VANCOUVER, B.C.*

Date of Completion of Engines *8-5-20*

.. .. Main Boilers *Tested 29-3-20*

.. .. Donkey .. ✓

Trial Run at *Vancouver, B.C.* Date *8-5-20*

First Visit *28-10-19.* Last Visit *8-5-20*

Total Number of Visits *18*



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ENGINES.

Made by *Builders Iron Foundry*
 " at *Providence, R-I* Works No.
 Description *Vertical, 3 Cylinder, Triple*
 No. of Cylinders, each Engine *3* Diars. *15 1/2" x 26" x 44"* Stroke *26"*
 Cub. feet in each L.P. Cylr. *23.75* Revols. per Min. *130* I.H.P. *700*
 Pressure in L.P. Receiver at full Power 2nd I.P. L.P.
 Thickness of Metal in H.P. Cylr. *1 1/4"* I.P. *1 1/4"* " *1 1/4"*
 " " " " Liner " " " "
 " " " " Valve Chest *1 1/8"* " *1 1/8"* " *1 1/8"*
 Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr.? *yes*
 " " " each Receiver? *yes*
 Number of ~~Studs~~ in H.P. Cylr. Cover *16* I.P. *22* 2nd I.P. L.P. *26*
 Eff. Diar. " " " *.838"* " *.838"* " " *.838"*
 Pitch " " " *3.73"* " *4.2"* " " *5.5"*
 Type of H.P. Valves (Piston or Slide) *Piston* " *Piston* " *Piston*
 " Valve Gear *Stephenson Link*
 Diameter of Piston Rods (plain part) *3 3/4"* At Bottom of Thread *2.678"*
 Makers " " Material *Steel*
 Diameter of Connecting Rods (smallest part) *3 3/4"* Material *Steel*
 Makers " " " "
 Diar. of Crosshead Gudgeons *4 1/2"* Length of Bearing *5 1/2"* Material *Steel*
 No. of Top End Bolts (each Rod) *4* Effective Diar. *1.711* Material *Steel*
 " Bot. " " *2* " *2.175* " "
 " Main Bearings *6* Lengths *1-9 3/8" 1-10"*
 " Bolts in each *2* Effective Diar. *1.961* Material *Steel*

No. of Holding Down Bolts, each Engine *83* No. of Metal Checks *83*
 Eff. Diar. " " " *1.064* Average Pitch *about 13"*
 Are the Engines bolted directly to the Tank Top? *yes*
 Are the Bolts tapped through the Tank Top and fitted with Nuts inside *yes*
 Date of Test of Tank by Water Pressure with Holding Down Bolts in place

SKETCHES.



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SKETCHES.

SHAFTING.

Are Crank Shafts Built? *yes* No. of Lengths in each *1* Angle of Cranks *120°*

Diar. of Crank Shafts by Rule *7.78* Actual *8 3/8* Diar. in Way of Webs *8 3/4*

Makers of " " Material *Steel*

Diar. of Crank Pins *8 1/2* Diar. in Way of Web *8 3/4*

Makers of " " Material *Steel*

Width across Crank Webs at Centre of Shaft *14"* Thickness *6"*

" " " Crank Pins *17"* " *6"*

" " " Narrowest part *17"* " *6"*

Makers of Crank Webs " " Material *Steel*

Diar. or Breadth of Keys in Crank Webs *2" x 1 1/2"* Length *6"*

" of Dowel Pins in Crank Pins Length Screwed or Plain

No. of Bolts in each Coupling *6* Diar. at Mid Length *2.35* Diar. of Pitch Circle *13"*

Material of Coupling Bolts *Steel*

Crank Shafts Finished by

Greatest Distance from edge of Main Bearing to Crank Web *1709c.*

Description of Thrust Blocks *separate horse shoe collars.*

Number " " Rings *6*

Diar. of Thrust Shafts by Rule *7.78"* Actual (at bot. of Collars) *8 3/8"* Over Collars *14 1/2"*

" " at Forward Coupling *8 3/8"* After Coupling *8 3/8"*

No. of Thrust Collars *6* Thickness *1 7/8"* Distance apart *3 3/8"*

Thrust Shafts Forged by " " Material *Steel*

" Finished by

Diar. of Intermediate Shafting by Rule *7.39"* Actual *8"*

No. of Lengths, each Engine *7* No. of Tunnel Bearings

Diar. of Bearings " Length " Distance apart "

No. of Bolts, each Coupling 6 Diar. at Mid Length 2.35 Diar. of Pitch Circle 13

Intermediate Shafts Forged by _____ Material *steel*

" " Finished by *Wallace Shipyards, Ltd.*

Diar. of Propeller Shafts by Rule *8.45"* Actual *8 1/2"* At Couplings *8 3/8"*

Are Propeller Shafts fitted with Continuous Brass Liners? *yes*

Diar. over Liners *9 5/8"* Length of After Bearings *3'-3"*

Of what Material are the After Bearings composed? *Lignum Vitae in Brass Bush*

Distance from After Bearing in Stern Tube to nearest Tunnel Bearing _____

Are the After Bearings lubricated with Oil or Sea Water? *Sea water*

What means are adopted to prevent Sea Water entering the Stern Tubes? _____

Propeller Shafts Forged by _____ Material *steel*

" " Finished by *Wallace Shipyards Ltd.*

No. of Propellers *1* Diar. *9'-6"* Pitch *10' 0"*

" Blades, each Propeller *4* Fitted or Solid *solid*

Material of Blades *cast iron* Boss *cast iron*

Surface, each Propeller *31.96 sq ft* Diar. of Propeller _____ Rule Diar. of Crank Shaft = *14.65*

Coefficient of Displacement of Vessel at $\frac{3}{4}$ Moulded Depth *.77*

THESE SKETCHES



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TURBINE ENGINES.

Type

No. of H.P. Turbines

No. of L.P. Turbines

No. of Astern "

How arranged

Revolts. per Min.

Horse Power

Diar. of H.P. Turbine Drums

MATERIAL

THICKNESS OF METAL

Material of H.P. Turbine Casings

" "

Lengths of Blades in H.P. Turbines

No. of Rows of Blades of each Length

Pitch of " " "

Diar. of L.P. Turbine Drums

MATERIAL

THICKNESS OF METAL.

Material of L.P. Turbine Casings

" "

Lengths of Blades in L.P. Turbines

No. of Rows of Blades of each Length

Pitch of " " "

Diar. of Astern Turbine Drums

MATERIAL

THICKNESS OF METAL

Material of Astern Turbine Casings

" "

Lengths of Blades in Astern Turbines

No. of Rows of Blades of each Length

Pitch of " " "

Diar. of Turbine Spindles

Length of Bearing

No. of Thrust Collars on each Spindle

Thickness

Distance apart

Diar. of Spindles at Bottom of Collars

Diar. over Collars

Spindles Forged by

Material

" Finished by

SKETCHES.



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PUMPS, ETC.

No. of Air Pumps *1* Diar. *10" x 18"* Stroke *12"*

Type of " *Independent, Vertical direct acting, simplex*

Diar. of Air Pump Rod Material

How are Air Pumps Worked?

No. of Centrifugal Circulating Pumps *1-6"* Maker *Morris Machine Wks.*

" Reciprocating " " Diar. Stroke

Diar. of Circulating Pump Rods Material

How are Circulating Pumps Worked? *Independent engine*

Diar. of Circulating Pump Suction from Sea *6"*

Has each Circulating Pump a Bilge Suction with Non-return Valve? *yes* Diar.

No. of Feed Pumps on each Engine Diar. Stroke

Where do they pump from?

" " discharge to?

Are Spring-loaded Relief Valves fitted to each Pump?

Can one Pump be overhauled while the others are at work?

No. of Bilge Pumps on each Engine Diar. Stroke

Where do they pump from?

" " discharge to?

Can one Pump be overhauled while the others are at work?

No. of Bilge Injections connected to Condensers *none* Diar.

Are all Bilge Suctions fitted with Roses? *yes*

Are the Valves, Cocks, and Pipes so arranged as to prevent unintentional connection between Sea and Bilges? *yes*

Are all Sea Connections made with Valves or Cocks fitted direct to the Hull Plating? *yes*

Are they placed so as to be easily seen and accessible? *yes*

Are the Discharge Chests placed above the Deep Load Line? *no*

Are they fitted direct to the Hull Plating and easily accessible? *yes*

Are all Blow-off Cocks or Valves fitted with Spigots through the Hull Plating and Covering Plates or Flanges on the outside? *yes*

All pumps independent

Main Feed 2'-8" x 5' x 12" Vert. simplex, float control & can be run independently of each other

Bilge & Ballast 1'0" 6" x 5 3/4" x 6" Horizontal dup. 7cx
Sanitary & Bilge 1'0" 4 1/2" x 2 3/4" x 4" " " "



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BOILERS.

Boilers made by *Vulcan Iron Works*
 at *Vancouver, B.C.*
 Works No. *1334*
 Date when Plan approved
 Boiler Plates, Iron or Steel *Steel*
 Makers of Shell Plates *Lukens Steel Co.*
 " Internal Plates " " "
 " Furnaces *American Spiral pipe Co.*
 " Stay Bars *Bethlehem Steel Corp.*
 " Rivets *Champion Rivet Co.*
 Material tested by (B.C., B.T., etc.) *American Bureau*
 No. of Boilers *One*
 Single or Double-ended *Single*
 No. of Furnaces, each Boiler *3*
 Type of Furnaces *Morrison Suspension*
 Approved Working Pressure *180 #*
 Hydraulic Test Pressure
 Date of Hydraulic Test
 " when Safety Valves set
 Pressure on Valves
 Date of Steam Accumulation Test
 Max. Pressure under Accumulation Test
 System of Draught *Natural*
 Can Boilers be worked separately? *—*
 Greatest inside Diam. of Boilers *14'-6"*
 " " Length " *10'-6"*
 Square Feet of Heating Surface, each Boiler *2272 #*
 " Grate " " *Oil burning, no grates*



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No. of Safety Valves, each Boiler 2
 Diar. " " " $3\frac{1}{2}$ "
 Area " " " 19.6 sq" each.
 Are the Valves fitted with Easing Gear? yes
 No. of Pressure Gauges, each Boiler Two
 " Water " " One
 " Test Cocks, Three
 " Salinometer Cocks, One
 Are Water Gauge Pillars attached by Pipes to Steam and Water Spaces? no
 Are these Pipes connected to Boilers by Cocks or Valves? -
 Are Blow-off Cocks or Valves fitted on Boiler Shells? yes, water
 No. of Strakes of Shell Plating in each Boiler One
 " Plates in each Strake Two
 Thickness of Shell Plates by Rule 37.8 Thirty seconds
 " " Approved $1\frac{5}{16}$ " 42/32
 " " in Boilers $1\frac{5}{16}$ "
 Are the Rivet Holes Punched or Drilled? Drilled
 Are Rivets Iron or Steel? Steel
 Are the Longitudinal Seams Butt or Lap Joints? Butt
 Are the Double Butt Straps of equal width? yes
 Thickness of outside Butt Straps $1\frac{1}{16}$ "
 " inside " $1\frac{7}{16}$ "
 Are Longitudinal Seams Hand or Machine Riveted? Hydraulic
 Are they Single, Double, or Treble Riveted? Treble
 Diar. of Rivet Holes $1\frac{3}{8}$ "
 Pitch " $5\frac{1}{4}$ "
 Width of Overlap $20\frac{1}{4}$ "
 Percentage of Strength in Longitudinal Seams Plate 85.1, Rivet 88



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No. of Rows of Rivets in Centre Circumferential Seams *no centre seam.*

Are these Seams Hand or Machine Riveted?

Diar. of Rivet Holes

Pitch

Width of Overlap

No. of Rows of Rivets in End Circumferential Seams *Two.*

Are these Seams Hand or Machine Riveted? *Back Hyd. Front Hand*

Diar. of Rivet Holes

1 5/16"

Pitch

3.825.

Width of Overlap

6 1/2

Size of Manholes in Shell

12" x 16"

Dimensions of Compensating Rings

1 5/16" x 28 1/2" x 32 1/2"

Thickness of End Plates in Steam Space by Rule

34.3/32

" " " " " Approved

1 1/8" 36/32

" " " " " in Boilers

1 1/8

Pitch of Steam Space Stays

19" Hor 19", 18", 17" Vertically.

Eff. Diar. " " " by Rule

2.65

" " " " " Approved

2.837

" " " " " in Boilers

2.837

Material of " " "

Steel

How are Stays Secured?

double nuts & washers

Diar. and Thickness of Loose Washers on End Plates

9" x 3/4"

" " Riveted " " "

Width " " Doubling Strips " "

Thickness of Middle Back End Plate by Rule

" " " " " Approved

" " " " " in Boilers



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Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at " " " "

Eff. Diar. of Stays by Rule

" " " " Approved

" " " " in Boilers

Material " "

Are Stays fitted with Nuts outside?

Thickness of Back End Plates at Bottom by Rule

27.55/32

" " " " " Approved

 $\frac{29}{32}$ "

" " " " " in Boilers

 $\frac{29}{32}$ "

Pitch of Stays at Wide Spaces between Fireboxes

12 $\frac{1}{4}$

Thickness of Doublings in " " "

none

Thickness of Front End Plates at Bottom by Rule

" " " " " Approved

1"

" " " " " in Boilers

1"

No. of Long Stays in Spaces between Furnaces

3 each side.

Eff. Diar. of Stays by Rule

" " " " Approved

1.817

" " " " in Boilers

1.817

Material of " "

Steel

Thickness of Front Tube Plates by Rule

29.5/32

" " " " Approved

1"

" " " " in Boilers

1"

Pitch of Stay Tubes at Spaces between Stacks of Tubes

12 $\frac{3}{4}$ "

Thickness of Doublings in " " "

none

" Stay Tubes at " " "

 $\frac{5}{16}$ "

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Are Stay Tubes fitted with Nuts at Front End? *no*

Thickness of Back Tube Plates by Rule *22.63/32*

" " " Approved *3/4*

" " " in Boilers *3/4*

Pitch of Stay Tubes in Back Tube Plates *8" x 12"*

" Plain " *4" x 4"*

Thickness of Stay Tubes *5/16 & 1/4"*

" Plain " *#10 B.W.C*

External Diam. of Tubes *3"*

Material " " *steel*

Thickness of Furnace Plates by Rule *16.8/32*

" " " Approved *9/16*

" " " in Boilers *9/16*

Smallest outside Diam. of Furnaces *3'-6 1/8"*

Length between Tube Plates *7'-1"*

Width of Combustion Chambers (Front to Back) *2'-8" outside*

Thickness of " " Tops, by Rule *17.2/32*

" " " " Approved *5/8"*

" " " " in Boilers *5/8"*

Pitch of Screwed Stays in C.C. Tops *6 3/4" 7 x 14 x 8"*

Eff. Diam. " " by Rule *1.209*

" " " Approved *1.37"*

" " " in Boilers *1.37"*

Material " " *steel*

Thickness of Combustion Chamber Sides by Rule *19.12/32*



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Thickness of Combustion Chamber Sides Approved $\frac{5}{8}$ "
 " " " " in Boilers $\frac{5}{8}$ "
 Pitch of Screwed Stays in C.C. Sides $6\frac{3}{4}$ " \times $6\frac{3}{4}$ "
 Eff. Diar. " " by Rule 1-118
 " " Approved 1-07"
 " " in Boilers 1-34"
 Material " " steel

Thickness of Combustion Chamber Backs by Rule 19-61/32
 " " Approved $\frac{5}{8}$ "
 " " in Boilers $\frac{5}{8}$ "
 Pitch of Screwed Stays in C.C. Backs $6\frac{3}{4}$ " Vertical \times 4 " \times $4\frac{1}{8}$ " Horizontal
 Eff. Diar. " " by Rule 1-148"
 " " Approved 1-37"
 " " in Boilers 1-37"
 Material " " steel

Are all Screwed Stays fitted with Nuts inside C.C.? riveted, except c.c. tops.
 Thickness of Combustion Chamber Bottoms $\frac{7}{8}$ "
 No. of Girders over each Wing Chamber 5
 " " Centre " 4
 Depth and Thickness of Girders 9 " \times $\frac{3}{4}$ " \times 2
 Material of Girders steel
 No. of Stays in each 3"

No. of Stay Tubes, each Boiler 52 - $\frac{5}{16}$ "
 " " Plain " " 40 - $\frac{1}{4}$ "
 " " " " 252
 Size of Lower Manholes 11" \times 15"

VERTICAL SUNKET BOILERS

If the boiler is vertical the following particulars should be stated in addition to those on

previous pages applicable to such boilers.

Type of boiler

Height of boiler above the base

Are boiler covers fitted or not?

Internal height of boiler

Description of seams in boiler covers

Width of overlap

Height of rivets above the plate

Are boiler covers fitted or not?

External height of boiler covers

No. of lower stays

External height of boiler at top

No. of water tubes

Material of water tubes

No. of screw stays in furnace plate

Are they fitted with nuts inside?

SUPERHEATERS

Description of superheater

Where situated

Which boiler are connected thereto?

Can superheaters be shut off?

No. of safety valves on superheaters



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VERTICAL DONKEY BOILERS. *No. 10*

If the Donkey Boilers are Vertical the following particulars should be stated in addition to those on previous Pages applicable to such Boilers:—

Type of Boilers *1443*

Height of Boiler Crown above Fire Grate *1107*

Are Boiler Crowns Flat or Dished? *1129*

Internal Radius of Dished Ends *1112* Thickness of Plates

Description of Seams in Boiler Crowns

Diar. of Rivet Holes Pitch Width of Overlap

Height of Firebox Crowns above Fire Grate

Are Firebox Crowns Flat or Dished?

External Radius of Dished Crowns Thickness of Plates *1112*

No. of Crown Stays Effective Diar. Material

External Diar. of Firebox at Top Bottom Thickness of Plates

No. of Water Tubes Int. Diar. " "

Material of Water Tubes

No. of Screwed Stays in Firebox Sides Eff. Diar. Material

Are they fitted with Nuts inside? Outside? *1112*

SUPERHEATERS. *No. 10*

Description of Superheaters

Where situated

Which Boilers are connected to Superheaters?

Can Superheaters be shut off while Boilers are working?

No. of Safety Valves on Superheaters Diar. Area

Are " " fitted with Easing Gear?

Date of Hydraulic Test Test Pressure

Date when Safety Valves set Pressure on Valves

SKETCHES. MAIN

REFRIGERATORS



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MAIN STEAM PIPES.

No. of Lengths	1			
Material	steel			
Brazed, Welded, or Seamless	welded			
Internal Diam.	4.813			
Thickness	.375			
How are Flanges Secured?	Expanded			
Date of Hydraulic Test				
Test Pressure				

REFRIGERATORS.

No. of Machines Makers *no refing.*

Description

When any part of the Vessel is to be used for the Carriage of Refrigerated Cargo the following particulars should be stated:—

Total Cubic Capacity of Refrigerated Spaces

Nature, Construction, Thickness, &c., of Insulation

Are all Pipes, Air Trunks, &c., well secured and protected from risk of damage?

Are all Bilge, Suction, Sounding, and Air Pipes in Insulated Spaces properly insulated?

Are Thermometer Tubes so arranged that Water cannot enter and freeze in the Tubes?

Are Sluice Valves fitted on any of the Bulkheads of Insulated Spaces?

Are these fitted with Brass Non-return Valves?

Are they always accessible?

Are the Bilges and Bilge Rose Boxes always accessible?

Are the Steam Suctions to Bilges fitted with Non-return Valves?

Is the Machine Room effectively separated from Insulated Spaces?

“ “ properly Ventilated and Drained?

No. of Steam Cylinders, each Machine Diars.

“ Compressors, “ “ “ “

Diam. of Crank Shafts No. of Cranks

Give particulars of Pumps in connection with Refrigerating Plant, and state whether worked by

Refrigerating Machines or independently

Are Brine and other Regulating Valves placed so as to be accessible without entering the Insulated Spaces?

Date of Test under Working Conditions

Fall of Temperature in Insulated Spaces

Time required to obtain this Result

Articles of Spare Gear for Refrigerating Plant carried on board



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SKETCHES.

ELECTRIC LIGHTING.

Installation Fitted by *Wattace Shipyards, Ltd.*
 No. and Description of Dynamos *1-10 Kw. 110V.*
 Makers of Dynamos *Engberg Electric Co.*
 Capacity „ *90* Amperes, at *110* Volts. Revols. per Min.
 Current Alternating or Continuous *D.C.*
 Position of Dynamos *in engine room*
 „ Main Switch Board *do.*
 No. of Circuits to which Switches are provided on Main Switch Board *4*

Particulars of these Circuits:—

No. of Circuit.	Name of Circuit.	Number of Lights.	Candle Power.	Current Required. Amps.	Size of Conductor.	Current Density.	Conductivity of Conductor.	Insulation Resistance per Mile.
1	Engine	6	120	3	14 BYS		1000 Amh per 99 in	600 megohms
2	"	6	120	3	" "		" " "	" "
3	Boiler	5	100	2 1/2	" "		" " "	" "
4	HoZds	3	320	12	10		" " "	" "
5	Nav.	7	140	3 1/2	10		" " "	" "
6	Accom odation	46	920	14 1/2	8		" " "	" "
7	Search light	43	1000	8	8		" " "	" "

Total No. of Lights

43

No. of Motors driving Fans, &c.

No. of Heaters

Current required for Motors and Heaters



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Positions of Auxiliary Switch Boards, with No. of Switches on each

Accommodation - Port side 8 circuits fitted with standard fuses - each controlled by switch

Engine Room - Boiler Room

Located in Engine Room 4 circuits fitted with standard fuses and switches

Located in Pilot house - 4 circuits controlling telegraphs, Compasses etc fuses etc

Located in Pilot house - Switchboard for control of navigating lights, switches & fuses

Are Cut-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

On Aux. " " each Auxiliary Circuit

Wherever a Cable is reduced in size

To each Lamp Circuit

To both Flow and Return Wires of all Circuits when the Double-Wire System is adopted

Are the Fuses of Standard Sizes?

Are all Switches and Cut-outs constructed of Non-inflammable Material?

Are they placed so as to be always and easily accessible?

Smallest Single Wire used, No. 14

Largest, No.

S.W.G.

How are Conductors in Engine and Boiler Spaces protected? In conduit

" " Saloons, State Rooms, &c., " ? Lead wire

What special protection is provided in the following cases?—

- (1) Conductors exposed to Heat or Damp Asbestos covered & W.T. Conduit
- (2) " " passing through Bunkers or Cargo Spaces In conduit
- (3) " " Deck Beams or Bulkheads In conduit.

Are all Joints in Cables properly soldered and thoroughly insulated so that the efficiency of the Cables

is unimpaired? yes

Are all Joints in accessible positions, none being made in Bunkers or Cargo Spaces? yes

Are all Hull Connections for Single-Wire Systems made with Screws of large Surface?

Are the Dynamos, Motors, Main and Branch Cables, so placed that the Compasses are not injuriously

affected by them? yes

Have Tests been made to prove that this condition has been satisfactorily fulfilled? yes

Has the Insulation Resistance over the whole system been tested? yes

What does the Resistance amount to? Infinity Ohms.

Is the Installation supplied with a Voltmeter? yes

" " " an Ampere Meter? yes

Date of Trial of complete Installation

8/5/20

Duration of Trial

5 Hours.



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EVAPORATORS.

No. _____ Type _____ Tons per Day _____
 Makers _____
 Working Pressure _____ Test Pressure _____ Date of Test _____
 Date of Test of Safety Valves under Steam _____

FEED WATER HEATERS.

No. _____ Type _____
 Makers _____
 Working Pressure _____ Test Pressure _____ Date of Test _____

DONKEY

No. of Donkeys **2**
 Type " **Horizontal Duplex**
 Makers " **Blake Pump & Condenser Co.
 Dow Pump & Diesel Engine Co.**
 Single or Duplex **Duplex.**
 " Double-Acting **D-A.**
 Diar. of Steam Cylinders **6 4 1/2"**
 " Pumps **5 3/4" 2 3/4"**
 Stroke of " **6" 4"**
 Where do they pump from? **Sea Sea**
Bilges Bilges
Tank Tank
 Where do they discharge to? **Overboard Overboard**
Wash decks & Fire Wash decks & Fire
 Capacity, Tons per Hour of Ballast Donkey _____ Diar. of Pipe required by Rule for _____

FEED WATER FILTERS.

No. **1** Type **gravity** Size _____
 Makers **Wallace Ship-gear Co Ltd**
 Working Pressure **atmos.** Test Pressure _____ Date of Test **8-5-20**

FORCED DRAUGHT FANS.

No. of Fans. _____ Diar. _____ Revols. per min. _____
 How are Fans driven? _____

PUMPS.



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SPARE GEAR.

No. of Top End Bolts	No. of Bot. End Bolts
Main Bearing Bolts 2 Top + 2 Btm.	Coupling Bolts 6
Cylr. Cover Bolts Studs see Valve Chest.	Valve Chest Cover Bolts Studs 15 for Valve Chest 1 for Covers
Feed Pump Valves	Bilge Pump Valves
Safety Valve Springs 1	Fire Bars
Piston Rings 4 H.P. 4 I.P., 2 L.P.	Junk Ring Bolts Studs
Piston Rods	Connecting Rods
Valve Spindles	Air Pump
Air Pump Valves 6	" " Buckets
Crank Pin Bushes	Crosshead Bushes 1
Crank Shafts	Propeller Shafts
Propellers	" " Blades
Boiler Tubes	Condenser Tubes

OTHER ARTICLES OF SPARE GEAR:—

1 - upper + 1 - lower packing ring for H.P. valve

4 Ecc. Rod Brasses	3 Box Wrenches
4 Drag Link "	1 Eccentric Strap
1 Link Block "	1 Btm End Con Rod Bearing
12 Link " Stoppers	2 1/2 lb Babbitt
4 Connecting Rod Bolts	2 main & any Check Valve Valves
2 Cross Head Bolts	2 Air Pump Piston Rings
2 Ecc. Strap "	2 Babbitt " " "
2 " " Studs	4 Sets Valves for Feed & Bilge Pumps
20 Open end Wrenches	2 Sets Metallic Rod Packing
2 Spanners	2 " Valve " "

GENERAL CONSTRUCTION.

Have all the Requirements under Sections 31 and 32 of the Rules been complied with? *yes*

If not, give details of the points of difference, and state when these were sanctioned by the Chief

Surveyor.

Are the Steam Pumping Arrangements in accordance with the approved Plan? *yes*

If not, state in what respects they differ and when such differences were sanctioned by the Chief

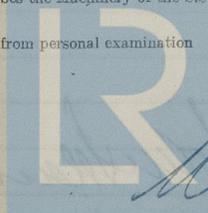
Surveyor

Are the Materials used in the Construction of Engines and Boilers, so far as could be seen, sound and trustworthy?

Is the Workmanship throughout thoroughly satisfactory? *yes*

The above correctly describes the Machinery of the S.S. *yes*

as ascertained by ^{us} _{me} from personal examination *yes*



M. C. Wallace

Engineer Surveyor to the British Corporation for the Survey and Registry of Shipping.



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