

No. 2164

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 2041 No. in Register Book 3381

S.S. "CASCO"

Makers of Engines *Carew S.B. & Eng. Co., Ltd.*

Works No. 670

Makers of Main Boilers *Carew S.B. & Eng. Co., Ltd.*

Works No. 670

Makers of Donkey Boiler *None.*

Works No. ✓

MACHINERY



2021
Lloyd's Register
Foundation

014110 - 014123 - 0060

No.

THE BRITISH CORPORATION FOR THE SURVEY

AND

REGISTRY OF SHIPPING.

Report No. No. in Register Book

Received at Head Office

5th August 1927

Surveyor's Report on the New Engines, Boilers, and Auxiliary Machinery of the ^{Single Triple} ~~Twin~~ ^{Quadruple} Screw "CASCO"

Official No. 160046 Port of Registry Hull.

Registered Owners Canada Starch Co., Ltd.

Engines Built by Charles Shipbuilding & Eng. Co.

at Hull.

Main Boilers Built by Charles S.B. & Eng. Co., Ltd.

at Hull.

Donkey " " None.

at

Date of Completion TRIALS CARRIED OUT. 1.6.27

First Visit 14.2.27 Last Visit 1.6.27 Total Visits 23.



RECIPROCATING ENGINES.

Works No. 670

No. of Sets 1

Description

Triple expansion Surface Condensing

No. of Cylinders each Engine 3 No. of Cranks 3

Diars. of Cylinders 17" x 28" x 46" Stroke 33

Cubic feet in each L.P. Cylinder 31.8

Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr.?

yes

" " " each Receiver?

yes

Type of H.P. Valves, Piston

" 1st I.P. "

Double ported Valve.

" 2nd I.P. "

" L.P. "

Double Ported Slide Valve.

" Valve Gear

Stephenson's

" Condenser

Surface

Cooling Surface 950 sq. ft.

Diameter of Piston Rods (plain part) 4 7/8" Screwed part (bottom of thread) 3 9/16"

Material " Forged Steel

Diar. of Connecting Rods (smallest part) 4 1/2" Material Forged Steel

" Crosshead Gudgeons 5 1/2" Length of Bearing 7 1/2" Material Mild Steel

No. of Crosshead Bolts (each) 2 Diar. over Thrd. 2 5/8" Thrds. per inch 6 Material Mild Steel

" Crank Pin " " 2 " 2 5/8" " 6 " "

" Main Bearings 9 1/4" Lengths 9 1/2"

" Bolts in each 2 Diar. over Thread 2 1/4" Threads per inch 6 Material Mild Steel

" Holding Down Bolts, each Engine 56 Diar. 1 1/4" No. of Metal Checks 51

Are the Engines bolted to the Tank Top or to a Built Seat? Tank Top.

Are the Bolts tapped through the Tank Top and fitted with Nuts Inside? yes

If not, how are they fitted?

Connecting Rods, Forged by Rotherham Forge.

Piston " " Rotherham Forge.

Crossheads, " " Carles & B. Co.

Connecting Rods, Finished by Carles & B. Co.

Piston " " Carles & B. Co.

Crossheads, " " Carles & B. Co.

Date of Harbour Trial 24.5.27.

" Trial Trip 1.6.27.

Trials run at Sunk Island on Hunter.

Were the Engines tested to full power under Sea-going conditions? yes.

If so, what was the L.H.P.? 943

Revs. per min. 90.5.

Pressure in 1st I.P. Receiver, 63 lbs., 2nd I.P., lbs., L.P., 10 1/2 lbs., Vacuum 26 ins.

Speed on Trial 9.4 knots.

If the Conditions on Trial were such that full power records were not obtained give the following estimated

data:—

Builders' estimated L.H.P. _____ Revols. per min. _____

Estimated Speed _____

H.P. Cylinder water tested to 270 lbs 18/3/27.



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TURBO-ELECTRIC PROPELLING MACHINERY.

No. of Turbo-Generating Sets Capacity of each

Type of Turbines employed

Description of Generators

No. of Motors driving Propeller Shafting

Are the Propeller Shafts driven direct by the Motors or through Gearing?

Is Single or Double Reduction Gear employed?

Description of Motors

Diar. of 1st Reduction Pinion

" 1st " Wheel

} Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diar. of 2nd Reduction Pinion

" 2nd " Wheel

} Width

Pitch of Teeth

Estimated Pressure per lineal inch

Revs. per min. of Generators at Full Power

" Motors "

" " 1st Reduction Shaft

" " 2nd "

" " Propellers at Full Power

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial Knots. Propeller Revs. per min.

S.H.P.

Makers of Turbines

" Generators

" Motors

" Reduction Gear

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

DESCRIPTION OF INSTALLATION.

Type of Turbine Blocks
 No. of Turbine Shafts at bottom of Collars
 Forward Coupling
 No. of Bolts each Coupling
 Diameter at Mid Length
 Diameter of Pitch Circle
 No. of Engines
 Diameter of Intermediate Shafts by Bolt
 Length of After Bearings
 Are Propeller Shafts fitted with Continuous Press Lubers?
 Are Means provided for lubricating the After Bearings with Oil?
 Is water used for cooling the Steam Turbines?
 Length of After Bearings
 Are Means provided for lubricating the After Bearings with Oil?
 Is water used for cooling the Steam Turbines?
 Length of After Bearings
 Are Means provided for lubricating the After Bearings with Oil?
 Is water used for cooling the Steam Turbines?



SHAFTING.

Are the Crank Shafts Built or Solid? *Built.*

No. of Lengths in each *2* Angle of Cranks *120°*

Diar. by Rule Actual *9 1/4"* In Way of Webs *9 1/2"*

„ of Crank Pins *9 1/4"* Length between Webs *10"*

Greatest Width of Crank Webs *18"* Thickness *6"*

Least „ „ „

Diar. of Keys in Crank Webs Length

„ Dowels in Crank Pins *1 3/8"* Length *4 1/2"* Screwed or Plain *Plain*

No. of Bolts each Coupling *6* Diar. at Mid Length *2 1/8"* Diar. of Pitch Circle *14 1/2"*

Greatest Distance from Edge of Main Bearing to Crank Web *5 1/8"*

Type of Thrust Blocks *Horse Shoe.*

No. „ Rings *4*

Diar. of Thrust Shafts at bottom of Collars *9 1/4"* No. of Collars *4*

„ „ Forward Coupling *9 1/4"* At Aft Coupling *9 1/4"*

Diar. of Intermediate Shafting by Rule *None.* Actual No. of Lengths

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

Diar. of Propeller Shafts by Rule Actual *10 3/4"* At Couplings *9 1/4"*

Are Propeller Shafts fitted with Continuous Brass Liners? *Yes.*

Diar. over Liners *11 15/16"* Length of After Bearings *3'-7"*

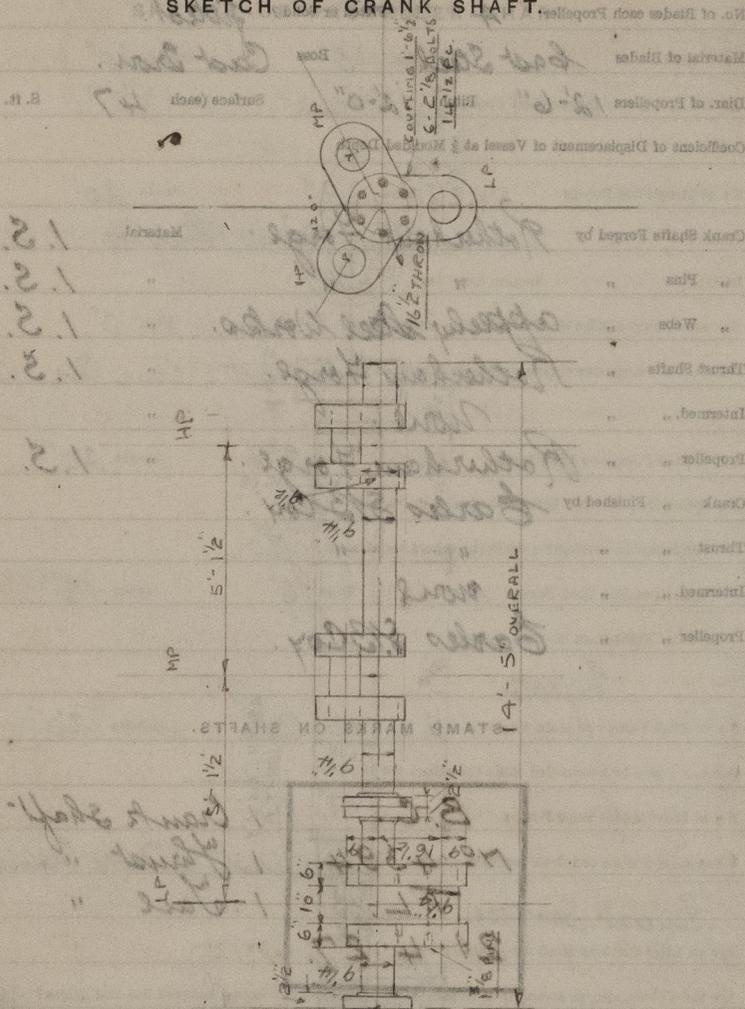
Of what Material are the After Bearings composed? *Lignum Vitae*

Are Means provided for lubricating the After Bearings with Oil? *No.*

„ „ to prevent Sea Water entering the Stern Tubes? *No.*

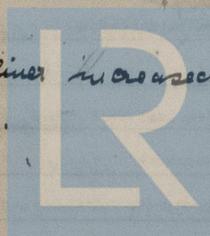
If so, what Type is adopted? _____

SKETCH OF CRANK SHAFT.



① Thickness of liner increased see Glasgow letter dated

8.4.27.



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BOILERS.

Works No. **670**

No. of Boilers **Two**. Type **Cylindrical Return Tube**

Single or Double-ended **Single**

No. of Furnaces in each **2**

Type of Furnaces **Deightons Section Withdrawable.**

Date when Plan approved **Feb. 1st 1927**

Approved Working Pressure **180 lbs.**

Hydraulic Test Pressure **320 lbs**

Date of Hydraulic Test **Port. Boiler 25-4-27. Starboard Boiler 29/4/27.**

„ when Safety Valves set **24.5.27**

Pressure at which Valves were set **180 lbs.**

Date of Accumulation Test **24.5.27.**

Maximum Pressure under Accumulation Test **191 lbs = 11 lbs accum**

System of Draught **Howdens**

Can Boilers be worked separately? **Yes**

Makers of Plates **Steel Co. of Scotland ✓**

„ Stay Bars **Frydlingham ✓**

„ Rivets **Rivet Bolt & Nut Co. Glasgow.**

„ Furnaces **J. Thomson (Wolverhampton) Ltd.**

Greatest Internal Diam. of Boilers **12'-0"**

„ „ Length „ **10'-10³/₈"**

Square Feet of Heating Surface each Boiler **1470 sq ft.**

„ „ Grate „ „ **38 sq ft.**

No. of Safety Valves each Boiler **2** Rule Diam. Actual **2¹/₂"**

Are the Safety Valves fitted with Easing Gear? **Yes.**

No. of Pressure Gauges, each Boiler **One.** No. of Water Gauges **2**

„ Test Cocks „ **-** „ Salinometer Cocks **1**

B.C. TEST.

No 2809

TEST. 320 lbs.

W.P. 180 lbs

25.4.27. T.L.

B.C. TEST.

No 2810

TEST. 320 lbs.

W.P. 180 lbs.

29.4.27 T.L.

Test Mark on
Port Boiler.

Test Mark on
Starboard Boiler



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Thickness of End Plates in Steam Space Approved

1/32"

" " " " in Boilers

1/32"

Pitch of Steam Space Stays

17" x 15 3/4"

Diar. " " " " Approved 2 3/4 Threads per Inch 6

" " " " " in Boilers 2 3/4 " 6

Material of " " " Steel 28 To 32 Tons Tensile

How are Stays Secured? Double Nuts

Diar. and Thickness of Loose Washers on End Plates -

" " Riveted " " " -

Width " " Doubling Strips " -

Thickness of Middle Back End Plates Approved -

" " " " " in Boilers -

Thickness of Doublings in Wide Spaces between Fireboxes -

Pitch of Stays at " " " " -

Diar. of Stays Approved Threads per Inch -

" " in Boilers " -

Material " " -

Are Stays fitted with Nuts outside? -

Thickness of Back End Plates at Bottom Approved

13/16"

" " " " " in Boilers

13/16"

Pitch of Stays at Wide Spaces between Fireboxes

14" x 9 1/2"

Thickness of Doublings in " " -

Thickness of Front End Plates at Bottom Approved

13/16"

" " " " " in Boilers

13/16"

No. of Longitudinal Stays in Spaces between Furnaces

Three

Thickness of End Plates Approved

" " " " in Boilers

Pitch of Steam Space Stays

Diar. " " " " Approved 2 3/4 Threads per Inch 6

" " " " " in Boilers 2 3/4 " 6

Material of " " " Steel 28 To 32 Tons Tensile

How are Stays Secured? Double Nuts

Diar. and Thickness of Loose Washers on End Plates -

" " Riveted " " " -

Width " " Doubling Strips " -

Thickness of Middle Back End Plates Approved -

" " " " " in Boilers -

Thickness of Doublings in Wide Spaces between Fireboxes -

Pitch of Stays at " " " " -

Diar. of Stays Approved Threads per Inch -

" " in Boilers " -

Material " " -

Are Stays fitted with Nuts outside? -

Thickness of Back End Plates at Bottom Approved

13/16"

" " " " " in Boilers

13/16"

Pitch of Stays at Wide Spaces between Fireboxes

14" x 9 1/2"

Thickness of Doublings in " " -

Thickness of Front End Plates at Bottom Approved

13/16"

" " " " " in Boilers

13/16"

No. of Longitudinal Stays in Spaces between Furnaces

Three



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Diar. of Stays Approved $2\frac{1}{2}'' - 2\frac{3}{4}''$ Threads per Inch 6.
 " " in Boilers $2\frac{1}{2}'' + 2\frac{3}{4}''$ 6.
 Material " Steel 28 To 32 Tons Tensile

Thickness of Front Tube Plates Approved $3/16''$
 " " " " in Boilers $3/16''$

Pitch of Stay Tubes at Spaces between Stacks of Tubes $13'' + 7\frac{1}{2}''$

Thickness of Doublings in " " " -
 " Stay Tubes at " " " $3/8''$

Are Stay Tubes fitted with Nuts at Front End? yes.

Thickness of Back Tube Plates Approved $7/8''$
 " " " in Boilers $7/8''$

Pitch of Stay Tubes in Back Tube Plates
 " Plain " $11\frac{5}{8}'' + 7\frac{1}{2}''$
 $3\frac{3}{8}'' + 3\frac{3}{4}''$

Thickness of Stay Tubes
 " Plain " $5/16''$ 9 3 4 R.
 9 G.

External Diar. of Tubes $2\frac{1}{2}''$
 Material " Iron.

Thickness of Furnace Plates Approved $17/32''$
 " " " in Boilers $17/32''$

Smallest outside Diar. of Furnaces $3 - 5\frac{9}{16}''$

Length between Tube Plates $7 - 3''$

Width of Combustion Chambers (Front to Back) $2 - 8\frac{13}{32}''$

Thickness of " " Tops Approved $1/16''$
 " " " in Boilers $1/16''$

Pitch of Screwed Stays in C.C. Tops $9\frac{7}{8}'' + 8\frac{1}{2}''$

Diar. of Screwed Stays Approved Threads per Inch
 " " in Boilers
 Material

Thickness of Combustion Chamber Plates Approved
 " " in Boilers

Pitch of Screwed Stays in C.C. Sides

Diar. of Stays Approved Threads per Inch
 " " in Boilers

Material

Thickness of Combustion Chamber Heads Approved
 " " in Boilers

Pitch of Screwed Stays in C.C. Heads
 Diar. of Stays Approved Threads per Inch

" " in Boilers
 Material

Are All Screwed Stays fitted with Nuts inside C.C.?
 Thickness of Combustion Chamber Bottoms

No. of Grids over each Wing Chamber
 " " Centre

Height and Thickness of Grids
 Material of Grids

No. of Stays in each
 No. of Tubes each Boiler

Size of Lower Flange



Diar. of Screwed Stays Approved $1\frac{5}{8}$ " Threads per Inch 6
 " " " in Boilers $1\frac{5}{8}$ " 6
 Material " " Steel 26 To 30 Tons.

Thickness of Combustion Chamber Sides Approved $1\frac{1}{16}$ "
 " " " " in Boilers $1\frac{1}{16}$ "
 Pitch of Screwed Stays in C.O. Sides $10" \times 8\frac{1}{2}"$

Diar. " " Approved $1\frac{5}{8}$ " Threads per Inch 9
 " " " in Boilers $1\frac{5}{8}$ " 9
 Material " " Steel 26 To 30 Tons.

Thickness of Combustion Chamber Backs Approved $2\frac{1}{32}$ "
 " " " " in Boilers $2\frac{1}{32}$ "
 Pitch of Screwed Stays in C.O. Backs $9\frac{1}{2} \times 8\frac{1}{2}"$
 Diar. " " Approved $1\frac{5}{8}$ " Threads per Inch 9
 " " " in Boilers $1\frac{5}{8}$ " 9
 Material " " Steel 26 To 30 Tons.

Are all Screwed Stays fitted with Nuts inside C.O.?

Yes

Thickness of Combustion Chamber Bottoms

$1\frac{1}{16}$ "

No. of Girders over each Wing Chamber

Five

" " " Centre "

Depth and Thickness of Girders

$8\frac{1}{2} \times 3\frac{1}{4}"$

Material of Girders

Steel 28 To 32 Tons.

No. of Stays in each

Two.

No. of Tubes, each Boiler

252

Size of Lower Manholes

$16" \times 12"$

VERTICAL DONKEY BOILERS

No. of Boilers
 Type
 Greatest Int. Diar.
 Height
 Height of Boiler Crown above Fire Grate
 Are Boiler Crowns Flat or Dished?
 Internal Radius of Dished Ends
 Thickness of Plates
 Description of Seams in Boiler Crown
 Diar. of Rivet Holes
 Width of Girders
 Height of Firebox Crown above Fire Grate
 Are Firebox Crowns Flat or Dished?
 External Radius of Dished Crowns
 No. of Crown Stays
 Material
 Diar.
 External Diar. of Firebox at Top
 Thickness of Plates
 Bottom
 No. of Water Tubes
 First Diar.
 Thickness
 Material of Water Tubes
 Size of Manhole in Shell
 Dimensions of Compressing Pipe
 Heating surface each Boiler
 Gross surface

SUPERHEATERS

Description of Superheaters
 Where situated?
 Which boilers are connected to superheaters?
 Can superheaters be used while boilers are working?
 No. of Safety Valves on each Superheater
 Date of Fitting Test
 Date when Safety Valves set
 Pressure on Valves



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VERTICAL DONKEY BOILERS.

No. of Boilers Type
 Greatest Int. Diar. Height
 Height of Boiler Crown above Fire Grate
 Are Boiler Crowns Flat or Dished?
 Internal Radius of Dished Ends 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
 No. of Crown Stays Diar. Material
 External Diar. of Firebox at Top Bottom Thickness of Plates
 No. of Water Tubes Ext. Diar. Thickness
 Material of Water Tubes
 Size of Manhole in Shell
 Dimensions of Compensating Ring
 Heating Surface, each Boiler Grate Surface

SUPERHEATERS.

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 each Superheater Diar.
 Are " " fitted with Easing Gear?
 Date of Hydraulic Test Test Pressure
 Date when Safety Valves set Pressure on Valves

MAIN STEAM PIPES.

No. of Lengths
 Material
 Joints, Welded or Screwed
 Internal Diar.
 Thickness
 How are Flanges secured?
 Date of Hydraulic Test
 Test Pressure

2
 Steel
 Screwed
 4
 1/2
 20.8.27
 240 lbs

No. of Lengths
 Material
 Joints, Welded or Screwed
 Internal Diar.
 Thickness
 How are Flanges secured?
 Date of Hydraulic Test
 Test Pressure



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LIST OF SPARE GEARS

No. of Top End Bolts	2	No. of Bot. End Bolts	2	No. of Cylinder Cover Studs	6
" Coupling Bolts	1 Set	" Main Bearing Bolts	2	" Valve Chest	6
" Junk Ring Bolts	6	" Feed Pump Valves	1 Set	" Bilge Pump Valves	1 Set
" H.P. Piston Rings	1 Set	" I.P. Piston Rings	-	" L.P. Piston Rings	-
" " Springs	-	" " Springs	-	" " Springs	-
" Safety Valve	1	" Fire Bars	1/4 Set	" Feed Check Valves	1 ^{man} _{aux.}
" Piston Rods	-	" Connecting Rods	-	" Valve Spindles	-
" Air Pump Rods	-	" Air Pump Buckets	-	" Air Pump Valves	1 Set
" Cir.	-	" Cir.	-	" Cir.	1 Set
" Crank Shafts	-	" Crank Pin Bushes	1	" Crosshead Bushes	1
" Propeller Shafts	-	" Propellers	-	" Propeller Blades	A
" Boiler Tubes	6	" Condenser Tubes	12	" Condenser Ferrules	24

OTHER ARTICLES OF SPARE GEAR:-

24 Condenser Packings

34 fire bars.

8 Propeller Blade Studs & nuts

Rings & Springs for H.P. Piston Valve (Top & Bottom)

8 Wing Bars.

Cheeks/plates for 2 furnaces.

3 Dry Water gauge glasses & Washers.

3 doz water gauge glass washers

REFRIGERATORS

No. of Machines	1	Capacity of each	200 cu ft.
Description	Hand operated 200 cu ft. capacity		
No. of Steam Cylinders and Valves	1	No. of Compressors	1
Particulars of pumps in connection with Refrigerating Plant and whether worked by Refrigerating Machine	or Independently		



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REFRIGERATORS.

No. of Machines *1* Capacity of each *200 Cu. feet.*
 Makers *Frick Co. Waynesboro, Ga. America*
 Description *4" x 4" Vertical Steam Engine and
 3" x 3" Single Cylinder Compressor.*

No. of Steam Cylinders, each Machine *1* No. of Compressors *1* No. of Cranks *1*

Particulars of Pumps in connection with Refrigerating Plant and whether worked by Refrigerating Machines
 or Independently

System of Refrigeration *C.O₂*

Insulation

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

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

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

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

Date of Test under Working Conditions

RESULTS OF TRIALS.

COMPARTMENT.	Temp. at beginning of Trial.	Temp. at end of Trial.	Time required to obtain this Result.	Rise of Temp. after hours.
ENGINE ROOM	19	30.5	} 2.36	} 100%
	1	200.1		
	4	120.2		
WATER ACCUMULATOR	61	52.5	} 2.36	} 100%
		50		

Articles of Spare Gear for Refrigerating Plant carried on board:—



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REPORT OF INSPECTION

200 Candles
 110 Volts
 400 Revs. per Min.
 68 Amperes at 110 Volts

ELECTRIC LIGHTING.

Installation Fitted by *Charles S.B. & Eng Coy Ltd*
 No. and Description of Dynamos *One*
 Makers of Dynamos *Clarke Chapman & Co Ltd*
 Capacity ,, *68* Amperes, at *110* Volts, *400* Revs. per Min.
 Current Alternating or Continuous *Continuous*
 Single or Double Wire System *Double*
 Position of Dynamos *On flat part side of Engine Room.*
 ,, Main Switch Board *Next to Dynamo*
 No. of Circuits to which Switches are provided on Main Switch Board *Five*
 Particulars of these Circuits:—

Circuit.	Number of Lights.	Candle Power.	Current Required. Amps.	Size of Conductor.	Current Density.	Conductivity of Conductor.	Insulation Resistance per Mile.
1) ENGINE ROOM.	19	30.	5.1	3/.036	12 Amps	100%	600 Megs.
	1	200	1				
	4	120	2.1				
2) AFT. ACCOMODATION.	21	30	5.7	3/.036	12 Amps	100%	600 Megs.
	1	60	.55				
3) CARGO LIGHTS.	38	30	10.4	7/.044	31 Amps	100%	600 Megs.
4) FWD. ACCOMODATION.	32	30	8.8	7/.044	31 Amps	100%	600 Megs.
	3	60	1.7				
5) SEARCH LIGHT.							

Total No. of Lights *120* No. of Motors driving Fans, &c. *NONE* No. of Heaters *NONE*

Current required for Motors and Heaters *NONE*

GENERAL CONSTRUCTION.

Have the Machinery and Boilers been constructed in accordance with the requirements of the Rules and the

Approved Plans? *yes.*

If not, give details of the points of difference, and state when these 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? *yes.*

Is the Workmanship throughout thoroughly satisfactory? *yes.*

The above correctly describes the Machinery of the S.S. "CASCO"

as ascertained by me from personal examination

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

Fees--

MAIN BOILERS. £ s. d.

H.S. Sq. ft. *22* : *1* : *0*

G.S. " : :

DONKEY BOILERS.

H.S. Sq. ft. : :

G.S. " : :

£ : :

ENGINES.

L.P.C. Cub. ft. *25* : *17* : *0*

£ : :

Testing, &c. : :

£ : :

Expenses ... *EL* ... *7* : *10* : *0*

Total ... £ *55* : *8* : *0*

It is submitted that this Report be approved,

John King
 Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the *10th August 1924.*

G. Andras
assjey



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 Secretary.

Fees advised

Fees paid

GENERAL CONSTRUCTION

MAN HOILERS

H.S. ... 22 : 1 : 00

DOKERY BOMERS

H.S. ...

H.S. ...

H.S. ...

H.S. ...

H.S. ...

H.S. ... 22 : 17 : 00

H.S. ...

H.S. ...

H.S. ...

H.S. ... 7 : 10 : 00

H.S. ... 22 : 27 : 00

It is admitted that this Report be approved.

Approved by the Committee for the Class of M.B.S. on the

Case



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