

No. 807

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

* Kerempi *

Report No. 793 No. in Register Book 1328

NELKON *

S.S. " Como "

Makers of Engines Amos & Smith Ltd.

Works No. 1464

Makers of Main Boilers Amos & Smith Ltd.

Works No. 1464

Makers of Donkey Boiler —

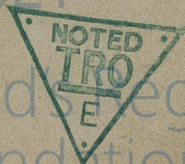
Works No. —

MACHINERY.



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No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 793 No. in Register Book 1328

Received at Head Office

11th October 1910

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the S. S. "Como"

Port of Registry

Registered Owners

Hull.
Messrs. Wilson Sons & Co. Ltd.
Hull.

Surveyor's District

Date of Completion of Engines

Hull.
September 1910.

" " " Main Boilers

September 1910.

" " " " Donkey "

Trial Run at River Humber.

Date 21. 9. 10.

First Visit

8. 3. 10

Last Visit

20. 9. 10.

Total Number of Visits

35.

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ENGINES.

Made by *Amos Smith & Co.*
 at *Hull* Works No. *1767*
 Description *Triple expansion, Inverted. 3 Cyl.*
 No. of Cylinders, each Engine *3.* Diars. *16½" 27" 45"* Stroke *33"*
 Cub. feet in ~~each~~ L.P. Cylr. *30.37* Revols. per Min. *77* I.H.P. *650*
 Pressure in I.P. Receiver at full Power *50 lbs* 2nd I.P. *✓* L.P. *6½ lbs*
 Thickness of Metal in H. P. Cylr. *1"* L.P. *1½"* " *✓* " *1½"*
 " " " " Liner *1"* " *✓* " *✓* " *✓*
 " " " " Valve Chest *1"* " *1"* " *✓* " *1"*
 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 *18* I.P. *18* 2nd I.P. *✓* L.P. *22*
 Eff. Diar. " " " *1½"* " *1½"* " *✓* " *1½"*
 Pitch " " " *3¾"* " *5⅞"* " *✓* " *7"*
 Type of H.P. Valves (Piston or Slide) *Piston* " *Piston* " *✓* " *Slide*
 " Valve Gear *Stephenson's Link Motion.*

Diameter of Piston Rods (plain part) *4½"* At Bottom of Thread *3¾"*
 Makers *J. Spence & Sons* Material *High Tensile Steel.*
36 to 40 Tons.

Diameter of Connecting Rods (smallest part) *4½"* Material *Iron*
 Makers *Bagnall & Sons*
 Diar. of Crosshead Gudgeons *5"* Length of Bearing *5"* Material *Iron.*

No. of Top End Bolts (each Rod) *4* Effective Diar. *1 25/32"* Material *Steel*
 " Bot. " " *2* " *2 7/32"* " *"*
 " Main Bearings *6* Lengths *9½"* " *"*
 " Bolts in each *2* Effective Diar. *2 1/32"* Material *"*

No. of Holding Down Bolts, each Engine *40* No. of Metal Chocks *17.*
 Eff. Diar. " " " *1.067* Average Pitch *17"*
 Are the Engines bolted directly to the Tank Top? *No.*
 Are the Bolts tapped through the Tank Top and fitted with Nuts inside? *No.*
 Date of Test of Tank by Water Pressure with Holding Down Bolts in place *✓*

SKETCHES.



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SKETCHES.

$$D = \sqrt[3]{\frac{180 \times 45^2 \times 33}{2150 \times \left(\frac{45}{16.5}\right)^2 + 2}} = 8.4''$$

1948
Como

$$\text{Thrust Shaft} = 1.05 \times 8.4 = 8.82'' \text{ made } 9.25''$$

$$D = \sqrt[3]{\frac{180 \times 45^2 \times 33}{19440}} \times 1 = 8.51 \text{ made } 9.25$$

8.756"

per Machy Booth

0124 2/2

SM 29-1-48

Description of Thrust Blocks

Horse shoe type

Number " " Rings

5

Diar. of Thrust Shafts by Rule 8.756 Actual (at bot. of Collars) 9 1/4" Over Collars 14 1/2"

" " at Forward Coupling 9 1/4" After Coupling 9 1/4"

No. of Thrust Collars 14 Thickness 1 7/8" Distance apart 5 5/8"

Thrust Shafts Forged by Gatchoffnungshutte Material Steel

" Finished by Amos & Smith Ltd.

Diar. of Intermediate Shafting by Rule 8.318" Actual 8 3/4"

No. of Lengths, each Engine 14 No. of Tunnel Bearings 3

Diar. of Bearings 9" Length 13" Distance apart 17'-0"

18630
810
19440

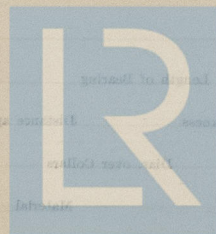
19530
18630
900

SHAFTING.

Are Crank Shafts Built? *Yes* No. of Lengths in each *One* Angle of Cranks *120*
 Diar. of Crank Shafts by Rule *8.756* Actual *9 1/4"* Diar. in Way of Webs *9 1/4"*
 Makers of *Gutehoffnungshutte* Material *Steel*
 Diar. of Crank Pins *9 1/4"* Diar. in Way of Web *9 1/4"*
 Makers of *Gutehoffnungshutte* Material *Steel*
 Width across Crank Webs at Centre of Shaft *18 1/2"* Thickness *5 3/4"*
 " " " Crank Pins *18 1/2"* *5 3/4"*
 " " " Narrowest part *18 1/2"* *5 3/4"*
 Makers of Crank Webs *Glasgow & S Co* Material *Steel*
 Diar. ~~or Breadth~~ of Keys in Crank Webs *2 1/8"* Length *5"*
 " of Dowel Pins in Crank Pins *1 1/8"* Length *3* Screwed or Plain *Plain*
 No. of Bolts in each Coupling *6* Diar. at Mid Length *2 1/2"* Diar. of Pitch Circle *14 3/4"*
 Material of Coupling Bolts *Steel*
 Crank Shafts Finished by *Amos & Smith Ltd.*
 Greatest Distance from edge of Main Bearing to Crank Web *4"*
 Description of Thrust Blocks *Horse shoe type*
 Number " " Rings *5*
 Diar. of Thrust Shafts by Rule *8.756* Actual (at bot. of Collars) *9 1/4"* Over Collars *14 1/2"*
 " " at Forward Coupling *9 1/4"* After Coupling *9 1/4"*
 No. of Thrust Collars *14* Thickness *1 7/8"* Distance apart *5 5/8"*
 Thrust Shafts Forged by *Gutehoffnungshutte* Material *Steel*
 " Finished by *Amos & Smith Ltd.*
 Diar. of Intermediate Shafting by Rule *8.318* Actual *8 3/4"*
 No. of Lengths, each Engine *14* No. of Tunnel Bearings *3*
 Diar. of Bearings *9"* Length *13"* Distance apart *13.0"*
17.0"

No. of Bolts, each Coupling 6 *Parance* $2\frac{1}{4}$ " *Diarm. of Pitch Circle* $14\frac{3}{4}$ "
 Intermediate Shafts Forged by *Gutchoffnungshutte* Material *Steel*
 " " Finished by *Amos & Smith Ltd.*
 Diar. of Propeller Shafts by Rule 9.657. Actual $10\frac{3}{4}$ " At Couplings $9\frac{1}{4}$ "
 Are Propeller Shafts fitted with Continuous Brass Liners? *Yes.*
 Diar. over Liners $11\frac{7}{8}$ " Length of After Bearings $3' 11"$
 Of what Material are the After Bearings composed? *Lignum vitae.*
 Distance from After Bearing in Stern Tube to nearest Tunnel Bearing $14' 0"$
 Are the After Bearings lubricated with Oil or Sea Water? *Oil*
 What means are adopted to prevent Sea Water entering the Stern Tubes? *None*
 Propeller Shafts Forged by *Gutchoffnungshutte* Material *Steel*
 " " Finished by *Amos & Smith Ltd.*
 No. of Propellers *One* Diar. $13' 2"$ Pitch $12' 6"$
 " Blades, each Propeller *four* Fitted or Solid *solid*
 Material of Blades *Cast iron* Boss *Cast iron*
 Surface, each Propeller *51 1/2* Diar. of Propeller Rule Diar. of Crank Shaft = 18
 Coefficient of Displacement of Vessel at $\frac{1}{2}$ Moulded Depth $.92$

SKETCHES



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TURBINE ENGINES.

Type

No. of H.P. Turbines

No. of L.P. Turbines

No. of Astern

How arranged

Revs. 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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SKETCHES.

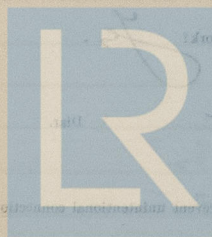
SKETCHES.

No. of Air Pumps 1
Type of "Single acting ordinary"
Diam. of Air Pump Rod 2 1/2"
How are Air Pumps Worked? from L.P. engine

No. of Condensing Pumps 1
Revolutions " " 9"
Diam. of Condensing Pump Rods 2 1/2"
How are Condensing Pumps Worked? from L.P. engine

Has each Condensing Pump a Relief Valve? Yes
Diam. 4"
No. of Feed Pumps on each Engine 2
Diam. 2 1/2"
Stroke 16"
Where do they pump from? Water
Discharge to? Boiler
Are they loaded Relief Valves fitted to each Pump? Yes
Can one Pump be overhauled while the others are at work? Yes

No. of Bilge Pumps on each Engine 2
Diam. 2 1/2"
Stroke 16"
Where do they pump from? Bilge for tank
Discharge to? Overboard to deck
Can one Pump be overhauled while the others are at work? Yes



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PUMPS ETC

No. of Air Pumps 1 Diar. 16 1/2" Stroke 16"
 Type of " Single acting ordinary
 Diar. of Air Pump Rod 2 1/2" Material Navy bronze
 How are Air Pumps Worked? from L.P. engine

No. of Centrifugal Circulating Pumps 1 Maker -
 " Reciprocating " " 1 Diar. 9" Stroke 16"
 Diar. of Circulating Pump Rods 2 1/2" Material Navy bronze
 How are Circulating Pumps Worked? from L.P. engine

Diar. of Circulating Pump Suction from Sea 5 1/2"
 Has ~~each~~ Circulating Pump a Bilge Suction with Non-return Valve? Yes Diar. 4"

No. of Feed Pumps on each Engine 2 Diar. 2 3/4" Stroke 16"
 Where do they pump from? Hot well
 " " discharge to? Boilers

Are Spring-loaded Relief Valves fitted to each Pump? Yes
 Can one Pump be overhauled while the others are at work? Yes

No. of Bilge Pumps on each Engine 2 Diar. 2 3/4" Stroke 16"
 Where do they pump from? Bilge, sea, tank.
 " " discharge to? Overboard & deck.

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

No. of Bilge Injections connected to Condensers 1 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? Yes

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

BOILERS.

Boilers made by *Amos & Smith Ltd.*
 " at *Hull.*
 Works No. *1767*
 Date when Plan approved *17-1-10*
 Boiler Plates, Iron or Steel *Steel*
 Makers of Shell Plates *The Phoenix Co. Stocarde*
 " Internal Plates
 " Furnaces *Jos. Peggitt & Co.*
 " Stay Bars *Tradingham Lr. S. Co.*
 " Rivets *Rivet. Coll. & Mfg. Co.*
 Material tested by (B.C., B.T., etc.) *B.C.*
 No. of Boilers *Two*
 Single or Double-ended *Single ended.*
 No. of Furnaces, each Boiler *Two*
 Type of Furnaces *Plain Bourlay Stephen back.*
 Approved Working Pressure *180 lbs.*
 Hydraulic Test Pressure *360 lbs.*
 Date of Hydraulic Test *14-7-10*
 " when Safety Valves set *20-9-10*
 Pressure on Valves *180 lbs.*
 Date of Steam Accumulation Test *20-9-10.*
 Max. Pressure under Accumulation Test *188 lbs.*
 System of Draught *Natural*
 Can Boilers be worked separately? *Yes.*
 Greatest inside Diam. of Boilers *11' 9 1/16"*
 " Length " *10' 1 3/4"*
 Square Feet of Heating Surface, each Boiler *1235*
 " Grate " " *37.125*



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No. of Safety Valves, each Boiler

Diar. " " "

Area " " "

Are the Valves fitted with Easing Gear?

No. of Pressure Gauges, each Boiler

" Water " "

" Test Cocks, " "

" Salinometer Cocks, " "

Are Water Gauge Pillars attached by Pipes to Steam and Water Spaces?

Are these Pipes connected to Boilers by Cocks or Valves?

Are Blow-off Cocks or Valves fitted on Boiler Shells?

No. of Strakes of Shell Plating in each Boiler

" Plates in each Strake

Thickness of Shell Plates by Rule

" " Approved

" " in Boilers

Are the Rivet Holes Punched or Drilled?

Are Rivets Iron or Steel?

Are the Longitudinal Seams Butt or Lap Joints?

Are the Double Butt Straps of equal width?

Thickness of outside Butt Straps

" Inside "

Are Longitudinal Seams Hand or Machine Riveted?

Are they Single, Double, or Treble Riveted?

Diar. of Rivet Holes

Pitch "

Width of ~~Overlap~~ STRAP

Percentage of Strength in Longitudinal Seams

Two

2 1/4

Ye.

One

One

Three

One

Ye.

Value to steam space
Cock to water space

Ye.

One

Two

3/32

3/32"

3/32"

Drilled

Steel

Butt.

Ye.

3/32"

7/8"

Machine

Treble

1 1/16"

7 1/2"

15 5/8"



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No. of Rows of Rivets in Centre Circumferential Seams ✓
 Are these Seams Hand or Machine Riveted? ✓
 Diam. 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 machine, Front hand.*
 Diam. of Rivet Holes *1 1/16"*
 Pitch " *3 1/4"*
 Width of Overlap *5"*
 Size of Manholes in Shell *16" x 12"*
 Dimensions of Compensating Rings *3' 4" x 2' 6"*

Thickness of End Plates in Steam Space by Rule

" " " " " Approved

" " " " " in Boilers

Pitch of Steam Space Stays *16 1/2" x 14 1/2" and 18" x 12"*

Eff. Diam. " " " by Rule *2.537"*

" " " " " Approved

" " " " " in Boilers

Material of " " " *Steel*

How are Stays Secured? *Front end, 2 screws through plate with nut outside. Back end Double nuts & washers.*

Diam. and Thickness of Loose Washers on End Plates *8 1/4" x 1/16"*

" " Riveted " " "

Width " " Doubling Strips " "

Thickness of Middle Back End Plate by Rule

" " " " " Approved

" " " " " in Boilers

Thickness of Doublers in White Space between Flanges

Pitch of Stays at

Eff. Diam. of Stays at Head

" " " " " Approved

" " " " " in Boilers

Material

Are Stays fitted with Nuts outside?

Thickness of Back End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

Pitch of Stays at White Space between Flanges

Thickness of Doublers in

Thickness of Front End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

No. of Long Stays in Space between Flanges

Eff. Diam. of Stays by Rule

" " " " " Approved

" " " " " in Boilers

Material of

Thickness of Front End Plates by Rule

" " " " " Approved

" " " " " in Boilers

Thickness of Back End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers



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Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at

14 $\frac{1}{4}$ "

Eff. Diar. of Stays by Rule

" " " Approved

1.747"

" " " in Boilers

1.747"

Material

Steel

Are Stays fitted with Nuts outside?

Yes

Thickness of Back End Plates at Bottom by Rule

12.5"

" " " " " Approved

7/8"

" " " " " in Boilers

7/8"

Pitch of Stays at Wide Spaces between Fireboxes

14 $\frac{1}{4}$ "

Thickness of Doublings in

✓

Thickness of Front End Plates at Bottom by Rule

—

" " " " " Approved

27/32"

" " " " " in Boilers

27/32"

No. of Long. Stays in Spaces between Furnaces

One

Eff. Diar. of Stays by Rule

" " " " " Approved

2.537"

" " " " " in Boilers

2.537"

Material

Steel

Thickness of Front Tube Plates by Rule

14 $\frac{3}{16}$ "

" " " " " Approved

27/32"

" " " " " in Boilers

27/32"

Pitch of Stay Tubes at Spaces between Stacks of Tubes

14 $\frac{1}{4}$ "

Thickness of Doublings in

✓

" Stay Tubes at

5/16" x 3/8"



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Are Stay Tubes fitted with Nuts at Front End?

Eight only fitted with nuts.

Thickness of Back Tube Plates by Rule

" " " Approved

" " " in Boilers

Pitch of Stay Tubes in Back Tube Plates

" Plain "

Thickness of Stay Tubes

" Plain "

External Diar. of Tubes

Material " "

Thickness of Furnace Plates by Rule

" " " Approved

" " " in Boiler

Smallest outside Diar. of Furnaces

Length between Tube Plates

Width of Combustion Chambers (Front to Back)

Thickness of " " " Tops, by Rule,

" " " " Approved

" " " " in Boilers

Pitch of Screwed Stays in C.C. Tops

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

Thickness of Combustion Chamber Sides by Rule

*13 3/16**27/32**27/32**9" x 13 1/2"**4 1/2 x 4 1/2**5/16" x 3/8"**8 W.G.**3 1/4**Iron**11 8/10**13/16**13/16**3' 6 1/8"**6' 8"**2' 6"**10 5/16**11/16**11/16**7 7/8 x 10"**1.45**1.494**1.494**Steel**10 4/16*

Thickness of Combustion Chamber Sides by Rule

Pitch of Stay Tubes in C.C. Sides

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

Thickness of Combustion Chamber Sides by Rule

Pitch of Stay Tubes in C.C. Sides

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

Thickness of Combustion Chamber Sides by Rule

Pitch of Stay Tubes in C.C. Sides

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

Thickness of Combustion Chamber Sides by Rule

Pitch of Stay Tubes in C.C. Sides

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

Thickness of Combustion Chamber Sides by Rule

Pitch of Stay Tubes in C.C. Sides

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "



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Thickness of Combustion Chamber Sides Approved

" " " " in Boilers

Pitch of Screwed Stays in C.C. Sides

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

11/16"
9" x 8 3/4"
1.14"

1.494"
1.497"

Steel

Thickness of Combustion Chamber Backs by Rule

" " " Approved

" " " in Boilers

Pitch of Screwed Stays in C.C. Backs

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

10.3"
11/16"
8 1/2" x 9"
1.444"

1.494"
1.497"
Steel

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

Thickness of Combustion Chamber Bottoms

Yes.
11/16"

No. of Girders over each Wing Chamber

" " " Centre "

Depth and Thickness of Girders

Material of Girders

No. of Stays in each

4

8" x 7/8" Two plates

Iron Steel

Two

No. of Stay Tubes, each Boiler

" " Plain " "

Size of lower Manholes

48

126

16" x 12"

VERTICAL DONKEY BOILERS

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 Boiler

Height of Boiler Crown above Fire Grate

Are Boiler Crowns Flat or Dished?

Internal Radius of Dished Boilers

Description of Seams in Boiler Crowns

Dish of Water Holes

Height of Firebox Crown above Fire Grate

Are Firebox Crowns Flat or Dished?

External Radius of Dished Crowns

No. of Crown Stays

External Diam. of Firebox at Top

No. of Water Tubes

Material of Water Tubes

No. of Screwed Stays in Firebox Sides

Are they fitted with Nuts inside?

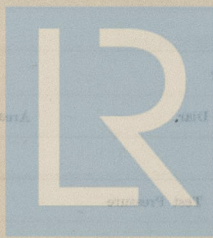
Outside?

SUPERHEATERS

Description of Superheaters

Where situated

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VERTICAL DONKEY BOILERS.

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

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

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?

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 Superheaters

Diar.

Area

Are " " fitted with Easing Gear?

Date of Hydraulic Test

Test Pressure

Date when Safety Valves set

Pressure on Valves

SKETCHES.

REFRIGERATORS.



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MAIN STEAM PIPES.

No. of Lengths *3.*

Material *Copper.*

Brazed, Welded, or Seamless *Seamless.*

Internal Diam. *3 1/4"*

Thickness *6. W. G.*

How are Flanges Secured? *Brazed.*

Date of Hydraulic Test *13.9.10.*

Test Pressure *360 lbs.*

REFRIGERATORS.

No. of Machines *Makers*

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?

Is the Machine Room properly Ventilated and Drained?

No. of Steam Cylinders, each Machine

Diams.

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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CONCLUSIONS

Is the Machine Room effectively separated from limited spaces?

ELECTRIC LIGHTING.

Installation Fitted by

No. and Description of Dynamos

Makers of Dynamos

Capacity	Amperes, at	Volts,	Revol. per Min.
----------	-------------	--------	-----------------

Current Alternating or Continuous

Position of Dynamos

Main Switch Board

No. of Circuits to which Switches are provided on Main Switch Board

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.

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Total No. of Lights

No. of Motors driving Faus, &c

No. of Heaters

Current required for Motors and Heaters

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

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. S.W.G., Largest, No. S.W.G.

How are Conductors in Engine and Boiler Spaces protected?

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

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp

(2) " " passing through Bunkers or Cargo Spaces

(3) " " Deck Beams or Bulkheads

Are all Joints in Cables properly soldered and thoroughly Insulated so that the efficiency of the Cables is unimpaired?

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

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?

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

Has the Insulation Resistance over the whole system been tested?

What does the Resistance amount to?

Is the Installation supplied with a Voltmeter?

" " " an Ampere Meter?

Date of Trial of complete Installation

Duration of Trial



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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

Type

Makers

Single or Duplex

Double-Acting

Diar. of Steam Cylinders

Pumps

Stroke of

Where do they pump from?

Where do they discharge to?

One
 Ballast
 Amos & Smith Ltd.
 Simple.
 Double acting.
 7 1/4"
 8"
 8"
 Sea tanks, bilges and
 separate bilge.

Overboard, tanks, Pecks.
 Main & Switch Condenser.

Capacity, Tons per Hour of Ballast Donkey

Diar. of Pipe required by Rule for

FEED WATER FILTERS.

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

FORCED DRAUGHT FANS.

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

PUMPS.

One
 Boiler feed donkey
 Amos & Smith Ltd.
 Duplex.
 Double acting.
 4 1/2"
 6"
 6"
 Hotwell, drain tank, sea, tanks
 & boilers.

Deck & boilers

largest Ballast Tank

Velocity of Water in Pipe

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SPARE GEAR.

No. of Top End Bolts	2	No. of Bot. End Bolts	2
" Main Bearing Bolts	2	" Coupling Bolts	6
" Cylr. Cover Bolts Studs	6	" Valve Chest Cover Bolts Studs	6
" Feed Pump Valves	4	" Bilge Pump Valves	4
" Safety Valve Springs	1 Set.	" Fire Bars	1/2 Set.
" Piston Rings	✓	" Junk Ring Bolts Studs	6
" Piston Rods	✓	" Connecting Rods	✓
" Valve Spindles	✓	" Air Pump 2 Studs & glands.	
" Air Pump Valves	1/2 Set.	" " Buckets	✓
" Crank Pin Bushes	✓	" Crosshead Bushes	✓
" Crank Shafts	✓	" Propeller Shafts	✓
" Propellers	1	" " Blades	✓
" Boiler Tubes	8	" Condenser Tubes	✓

OTHER ARTICLES OF SPARE GEAR.

1 set feed check valves. (main)
 1 " " " (donkey)
 1 ecc. strab
 1/2 set Circ. pump valves.
 8 tube stoppers.
 40 Condenser tube ferrules.
 2 Valves for donkey pump.
 1 " spindle.

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

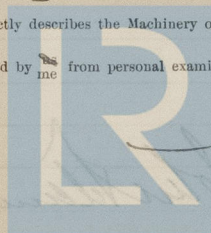
Surveyor

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

Is the Workmanship throughout thoroughly satisfactory? *Yes.*

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

as ascertained by me from personal examination.



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

Fees—

MAIN BOILERS.

H.S. 2470. Sq. ft. 12 : 0 : 0

G.S. 74-25. " : : :

DONKEY BOILERS.

H.S. ✓ Sq. ft. : : :

G.S. ✓ " : : :

£ : :

ENGINES.

L.P.C. 30-37. Cub. ft. 9 : 0 : 0

Testing, &c. : : :

£ : :

Expenses ... : : :

Total ... £ 21 : 0 : 0

It is submitted that this Report be approved,

W. H. King
Chief Surveyor.

Approved by the Committee.

*for the class of M.B.N.**
on the 12th September 1890

Fees applied for 24-9-10.

Fees paid

Robert Manning
Secretary.



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Page -

Main Balance

105 2470.00 12 0.00

05 74.25

✓ 1/2 DUNNETT BALANCE

B2 100.00

0.5

Cash in

105 30 37.00 9 0.00

Approved

Total 121 0.00

It is submitted that this Report be approved.

W. L. King
 Clerk

Approved by the members of the Board of M. B. N. *
 on the 12th October 1910

First printed for 24 0.00

New York

W. L. King
 Clerk



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