

No. 672

THE BRITISH CORPORATION FOR THE SURVEY  
AND  
REGISTRY OF SHIPPING.

*[Handwritten signature]*

Report No. 647 No. in Register Book 1176

S.S. *NORBURN*

Makers of Engines *Central Marine Eng. Works.*

Works No. \_\_\_\_\_

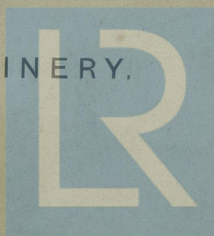
Makers of Main Boilers *Central Marine Eng. Works.*

Works No. *R.169.*

Makers of Donkey Boiler *Cochran & Co. Ltd.*

Works No. \_\_\_\_\_

MACHINERY.



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No.

THE BRITISH CORPORATION FOR THE SURVEY  
AND  
REGISTRY OF SHIPPING.

Report No. 647 No. in Register Book 1176

Received at Head Office

11th November 1908.

Surveyor's Report on the New Engines, Boilers, and Auxiliary  
Machinery of the *Steel Screw Steamer*  
*"Hortburn"*

Port of Registry

*West. Liverpool*

Registered Owners

*"Hortburn" S. S. Co. Ltd.*

*Smith, Fogg & Co. Managers*

Surveyor's District

*Sunderland*

Date of Completion of Engines

*4. 1891*

" "

" Main Boilers

*10. 1908*

" "

" Donkey "

*10. 1908*

Trial Run at

*North Sea*

Date

*Oct. 17. 08.*

First Visit

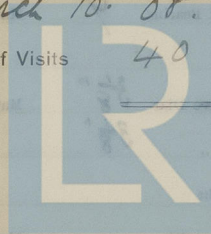
*March 10. 08.*

Last Visit

*17. 10. 08.*

Total Number of Visits

*40*



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## ENGINES.

Made by *Central Marine Eng. Works*  
 " at *W. Hartlepool* Works No.  
 Description *Triple Expansion, S. C. 3. Cyl.*  
 No. of Cylinders, each Engine *3* Diars. *22" 35" 58"* Stroke *39"*  
 Cub. feet in each L.P. Cylr. *59.62* Revols. per Min. *62* I.H.P.  
 Pressure in I.P. Receiver at full Power *42 lbs.* 2nd I.P. *-* L.P. *4 lbs.*  
 Thickness of Metal in H. P. Cylr. I.P. " "  
 " " " " Liner " "  
 " " " " Valve Chest " "  
 Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr. *yes*  
 " " " " each Receiver?  
 Number of Bolts in H.P. Cylr. Cover I.P. 2nd I.P. L.P.  
 " " " " *1 1/8" 1 1/8" 1 1/8"*  
 Pitch " " " " " "  
 Type of H.P. Valves (Piston or Slide) *Slide Slide Slide*  
 " Valve Gear *Stephenson's Link Motion*  
 Diameter of Piston Rods (plain part) *HP 5 1/2" IP 4 1/8" LP 4 1/2"* At Bottom of Thread *3.53"*  
 Makers " Material  
 Diameter of Connecting Rods (smallest part) *5"* Material  
 Makers " " " "  
 Diar. of Crosshead Gudgeons *6 3/4"* Length of Bearing *9"* Material  
 No. of Top End Bolts (each Rod) *2* Effective Diar. *3 1/8"* Material  
 " Bot. " " *2* " *3 1/8"* "  
 " Main Bearings *6* Lengths  
 " Bolts in each *2* Effective Diar. Material

No. of Holding Down Bolts, each Engine

No. of Metal Chocks

Diar. " " "

Average Pitch

Are the Engines bolted directly to the Tank Top?

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

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? No. of Lengths in each Angle of Cranks

Diar. of Crank Shafts by Rule  $10.787''$  Actual  $10\frac{1}{16}''$  Diar. in Way of Webs

Makers of " Material

Diar. of Crank Pins Diar. in Way of Web

Makers of " Material

Width across Crank Webs at Centre of Shaft Thickness

" " " " Crank Pins

" " " " Narrowest part

Makers of Crank Webs Material

Diar. or Breadth of Keys in Crank Webs Length

" of Dowel Pins in Crank Pins Length Screwed or Plain

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

Material of Coupling Bolts

Crank Shafts Finished by

Greatest Distance from edge of Main Bearing to Crank Web

Description of Thrust Blocks

Number " " Rings 5

Diar. of Thrust Shafts by Rule  $10.78$  Actual (at bot. of Collars)  $10\frac{1}{16}''$  Over Collars

" " at Forward Coupling After Coupling

No. of Thrust Collars 4 Thickness 2" Distance apart  $4\frac{1}{4}''$

Thrust Shafts Forged by Material

" Finished by

Diar. of Intermediate Shafting by Rule  $10.2''$  Actual  $10\frac{1}{8}''$

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

Diar. of Bearings  $10\frac{1}{4}''$  Length Distance apart



No. of Bolts, each Coupling 6      Diar. at Mid Length  $2\frac{3}{4}$       Diar. of Pitch Circle  $15\frac{1}{4}$

Intermediate Shafts Forged by      Material

Finished by

Diar. of Propeller Shafts by Rule  $12\frac{1}{2}$ "      Actual  $12\frac{3}{8}$ "      At Couplings  $12\frac{1}{2}$ "

Are Propeller Shafts fitted with Continuous Brass Liners?

2 Liners

Diar. over Liners  $13\frac{3}{8}$ " &  $13\frac{1}{2}$ "      Length of After Bearings  $4'-2\frac{1}{8}"$

Of what Material are the After Bearings composed?

L. V.

Distance from After Bearing in Stern Tube to nearest Tunnel Bearing  $20'-0"$

Are the After Bearings lubricated with Oil or Sea Water?

S. W.

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

Propeller Shafts Forged by Central Marine Eng. Works      Material &

Finished by do.

No. of Propellers 1      Diar.  $15'-3"$       Pitch  $16'-0"$

Blades, each Propeller 4

Fitted or Solid

Solid

Material of Blades C. I.

Boss

C. I.

Surface, each Propeller  $70\frac{1}{2}$

Diar. of Propeller Rule Diar. of Crank Shaft =  $17'-04$

Coefficient of Displacement of Vessel at  $\frac{4}{5}$  Moulded Depth  $.795$

# SKETCHES



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## TURBINE ENGINES.

Type

No. of H.P. Turbines

No. of L.P. Turbines

No. of Astern "

How arranged

Revol. 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. 17" Stroke 26"  
 Type of " Ordinary  
 Diar. of Air Pump Rod 2 3/4" Material M. M.  
 How are Air Pumps Worked? By levers from L.P. Engine

No. of Centrifugal Circulating Pumps - Maker -  
 " Reciprocating " " 1 Diar. 10" Stroke 26"  
 Diar. of Circulating Pump Rods 2 3/4" Material M. M.  
 How are Circulating Pumps Worked? By levers from L.P. Engine

Diar. of Circulating Pump Suction from Sea 6 1/2"  
 Has each Circulating Pump a Bilge Suction with Non-return Valve? Yes Diar. 5"

No. of Feed Pumps on each Engine 2 Diar. 3" Stroke 26"  
 Where do they pump from? Hotwell  
 " " 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. 3 1/2" Stroke 26"  
 Where do they pump from? All bilges; & sea with Pot-Pump  
 " " discharge to? On deck, & overboard  
 Can one Pump be overhauled while the others are at work? Yes

No. of Bilge Injections connected to Condensers - 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



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## BOILERS.

Boilers made by *The Central Marine Eng. Wks.*  
 at *Hartlepool*  
 Works No. *R.169.*

Date when Plan approved

Boiler Plates, Iron or Steel

Makers of Shell Plates

Internal Plates

Furnaces

Stay Bars

Rivets

Material tested by (B.C., B.T., etc.)

No. of Boilers

Single or Double-ended

No. of Furnaces, each Boiler

Type of Furnaces

Approved Working Pressure

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

Can Boilers be worked separately?

Greatest inside Diam. of Boilers

Length

Square Feet of Heating Surface, each Boiler

Grate

*Steel*

*Spencer*

*do*

*Brown & Co.*

*Spencer*

*Millar*

*L.R.*

*2*

*S.E.*

*3*

*Brown's Improved Purvis*

*160 lbs.*

*320 lbs.*

*27. 5. 08.*

*Sep. 25. 08*

*165 lbs.*

*Sep. 25. 08*

*169 lbs.*

*Natural*

*Yes*

*13' 9"*

*10' - 0"*

*1730*

*42' 5"*

*Donkey Boiler*  
*Cochran & Co.*  
*Aman*

*6. 10. 08.*

*92*

*6. 10. 08.*

*94*



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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

Percentage of Strength in Longitudinal Seams

2  
3 1/4"

16.59

yes

1

1

1

yes

yes

Valves

1

2

16.7  
16

1 1/8"

1 1/8"

Drilled

Steel

Butt

yes

1"

1"

Machine

Treble

1 1/8"

7 1/4"

8 1/8"

85.3%

2

2 1/4"

7.95



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No. of Rows of Rivets in Centre Circumferential Seams ✓

Are these Seams Hand or Machine Riveted? ✓

Diar. of Rivet Holes ✓

Pitch " ✓

Width of Overlap ✓

No. of Rows of Rivets in End Circumferential Seams 2

Are these Seams Hand or Machine Riveted?

Diar. of Rivet Holes  $\frac{1}{8}$ "Pitch "  $3\frac{3}{4}$ "Width of Overlap  $4\frac{7}{8}$ "Size of Manholes in Shell  $16" \times 12"$  on boiler backs

Dimensions of Compensating Rings ✓

Thickness of End Plates in Steam Space by Rule  $\frac{19.1}{16}$ " " " " " Approved  $1\frac{3}{16}$ "" " " " " in Boilers  $1\frac{3}{16}$ "Pitch of Steam Space Stays  $20" \times 19\frac{1}{2}"$ Eff. Diar. " " " by Rule  $2.77"$ " " " " " Approved  $2.786"$ " " " " " in Boilers  $2.786"$ 

Material of " " " Steel

How are Stays Secured? nuts inside &amp; outside

Diar. and Thickness of Loose Washers on End Plates

" " 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

" " " " " Approved

" " " " " in Boilers

Pitch of Stays at Wide Spaces between Fireboxes

Thickness of Doublings in " "

Thickness of Front End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

No. of Long. Stays in Spaces between Furnaces

Eff. Diar. of Stays by Rule

" " " " Approved

" " " " in Boilers

Material of "

Thickness of Front Tube Plates by Rule

" " " " Approved

" " " " in Boilers

Pitch of Stay Tubes at Spaces between Stacks of Tubes

Thickness of Doublings in " " "

" Stay Tubes at " " "

$$\frac{12.8}{16}$$

$$\frac{15}{16}$$

$$\frac{15}{16}$$

$$\frac{15}{16}$$

$$\frac{13.8}{16}$$

$$\frac{15}{16}$$

$$\frac{15}{16}$$

$$\frac{1}{1}$$

$$1.77"$$

$$2.162$$

$$2.162$$

$$Steel$$

$$\frac{13.2}{16}$$

$$\frac{15}{16}$$

$$\frac{15}{16}$$

$$\frac{15}{16}$$

$$14\frac{1}{2}" \times 9"$$

$$5\frac{1}{16}" \times 3\frac{3}{8}"$$



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Are Stay Tubes fitted with Nuts at Front End? *The outer rows*

Thickness of Back Tube Plates by Rule

$$\frac{9.8}{16}$$

" " " Approved

$$\frac{3}{4}$$

" " " in Boilers

$$\frac{3}{4}$$

Pitch of Stay Tubes in Back Tube Plates

$$9" \times 9"$$

" Plain "

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

Thickness of Stay Tubes

$$\frac{5}{16}" \times \frac{3}{8}"$$

" Plain "

$$\text{No. 9. I. S. W. G.}$$

External Diar. of Tubes

$$3\frac{1}{4}"$$

Material " "

*Iron*

Thickness of Furnace Plates by Rule

$$\frac{2.1}{16}$$

" " " Approved

$$\frac{15}{32}$$

" " " in Boilers

$$\frac{15}{32}$$

Smallest outside Diar. of Furnaces

$$3'-0\frac{3}{8}"$$

Length between Tube Plates

$$6'-9\frac{13}{16}"$$

Width of Combustion Chambers (Front to Back)

$$2'-2\frac{1}{32}"$$

Thickness of " " " Tops, by Rule,

$$\frac{9.41}{16}$$

" " " " Approved

$$\frac{19}{32}$$

" " " " in Boilers

$$\frac{19}{32}$$

Pitch of Screwed Stays in C.C. Tops

$$9" \times 8"$$

Eff. Diar. " " by Rule

$$1.32$$

" " " Approved

$$1.383"$$

" " " in Boilers

$$1.383"$$

Material " "

*Steel*

Thickness of Combustion Chamber Sides by Rule

$$\frac{9.57}{16}$$

Thickness of Combustion Chamber Sides by Rule

" " " " Approved

" " " " in Boilers

" " " " by Rule

" " " " Approved

" " " " in Boilers

" " " " Material

Thickness of Combustion Chamber Sides by Rule

" " " " Approved

" " " " in Boilers

" " " " by Rule

" " " " Approved

" " " " in Boilers

" " " " Material

" " " " by Rule

" " " " Approved

" " " " in Boilers

" " " " Material

" " " " by Rule

" " " " Approved

" " " " in Boilers

" " " " Material

" " " " by Rule

" " " " Approved

" " " " in Boilers

" " " " Material

" " " " by Rule

" " " " Approved

" " " " in Boilers



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Thickness of Combustion Chamber Sides Approved

 $\frac{19}{32}$ "

" " " " in Boilers

 $\frac{19}{32}$ "

Pitch of Screwed Stays in C.C. Sides

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

Eff. Diar. " " by Rule

1.34"

" " " Approved

1.383"

" " " in Boilers

1.383"

Material " "

Steel

Thickness of Combustion Chamber Backs by Rule

 $\frac{2.4}{16}$ 

" " " Approved

 $\frac{19}{32}$ "

" " " in Boilers

 $\frac{19}{32}$ "

Pitch of Screwed Stays in C.C. Backs

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

Eff. Diar. " " by Rule

1.33"

" " " Approved

1.633 outer rows 1.383 inner rows.

" " " in Boilers

1.633, do. 1.383, do.

Material " "

Steel

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

 $\frac{7}{8}$ 

Thickness of Combustion Chamber Bottoms

 $\frac{3}{4}"$ 

No. of Girders over each Wing Chamber

4

" " " Centre "

2

Depth and Thickness of Girders

2 -  $\frac{5}{8}"$  Plates  $\times 8\frac{1}{2}"$  deep.

Material of Girders

Steel

No. of Stays in each

2

No. of Stay Tubes, each Boiler

82

" " Plain " "

158

Size of lower Manholes

 $14" \times 10\frac{1}{2}"$ 

## 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 Boilers Crowned Flat or Dished?

Internal Radius of Crowned Boilers

Description of Stays in Boiler Crown

Pitch of Water Tubes

Height of Water Tubes above Fire Grate

Are Water Tubes Crowned Flat or Dished?

External Radius of Dished Water Tubes

No. of Crown Stays

External Diam. of Tubes at Top

No. of Water Tubes

Material of Water Tubes

No. of Screwed Stays in Water Tubes

Are they fitted with Nuts inside?

## SUPERHEATERS

Description of Superheaters

Where situated

Which Boilers are connected to superheaters?

An equivalent to the work of the boiler

No. of Safety Valves on Superheaters



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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

Material

Brazed, Welded, or Seamless

Internal Diam.

Thickness

How are Flanges Secured?

Date of Hydraulic Test

Test Pressure

1	1
Copper	Copper
S.D.	S.D.
4"	5"
6 H.G.	3 H.G.
Brazed	Brazed
10.9.08	15.9.08
400 lbs.	400 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, &amp;c., of Insulation

Are all Pipes, Air Trunks, &amp;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

No. and Description of Dynamos

## Makers of Dynamos

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


Current Alternating or Continuous

### Position of Dynamos

11 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 Fans, &amp;c. No. of Heaters

### Current required for Motors and Heaters

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 ing Fans, &c. No. of Heaters



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 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?

Ohms.

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. *1* Type *C. Marine Eng. Wks.* Tons per Da  
 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?

Capacity, Tons per Hour of Ballast Donkey

*- Ballast -**One  
Vertical**Central Marine Eng. Wks.**Single**D.A.**7"**8"**8"**All bilges, Tanks, Sea.**Overboard, Thro' Tanks,  
into all Tanks**64*

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.

*- Feed -**One  
Horizontal  
Worthington  
Duplex**D.A.**5 1/4"**3 1/2"**5"**Holwell, Sea, Tanks.**Boilers & 0<sup>th</sup> deck*

largest Ballast Tank

*4"*

Velocity of Water in Pipe

*428*

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## SPARE GEAR.

No. of Top End Bolts	2	No. of Bot. End Bolts	2
" Main Bearing Bolts	2	" Coupling Bolts	1. <i>Let</i>
" Cylr. Cover Bolts Studs	6	" Valve Chest Cover Bolts Studs	6
" Feed Pump Valves	1 <i>Let</i>	" Bilge Pump Valves	1 <i>Let</i>
" Safety Valve Springs		" Fire Bars	1/2 <i>Let</i>
" Piston <del>Rings</del> <i>Spring for H. P.</i>		" Junk Ring Bolts Studs	
" Piston Rods	✓	" Connecting Rods	
" Valve Spindles	✓	" Air Pump "	
" Air Pump Valves		" " " Buckets	
" Crank Pin Bushes		" Crosshead Bushes	
" Crank Shafts		" Propeller Shafts	
" Propellers	1	" " Blades	
" Boiler Tubes		" Condenser Tubes	

## OTHER ARTICLES OF SPARE GEAR:—

*Bar & Plate Iron Assorted  
Bolts, nuts, & Studs Assorted*

## GENERAL CONSTRUCTION.

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

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

Surveyor.

*Machinery built in 1891. & accepted  
for classification. - See letter dated  
March 12. 08.*

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.

as ascertained by <sup>us</sup> ~~me~~ from personal examination.

*"Hornburn"*

*Duncan & Co. Ltd.  
Eng. & Shipbldg.*

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



## Fees—

## MAIN BOILERS,

H.S. 3460 Sq. ft. 15 : 0 : 0

G.S. 85.5 " : :

## DONKEY BOILERS.

H.S. 350 Sq. ft. : :

G.S. 18.75 " : :

£ : :

## ENGINES.

L.P.C. 59.62 Cub. ft. 16 : 0 : 0 Half Fee only charged.

£ : : 8 - 0 - 0

Testing, &amp;c. : : 15 - 0 - 0

£ : :

Expenses : :

Total ... £ 31 : 0 : 0 23 - 0 - 0

It is submitted that this Report be approved,

*Robert King*  
Chief Surveyor.

Approved by the Committee,

for the class of M.B.S. (\*)  
on the 11<sup>th</sup> November 1908

Fees applied for 13-10-08

Fees paid 15-10-08

14-11-08

*Robert Fleming*  
Secretary.



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