

No. 1848

THE BRITISH CORPORATION FOR THE SURVEY

AND



REGISTRY OF SHIPPING.

Report No. .... No. in Register Book **3600**

S.S. .... " **CELTIC MONARCH** "

Makers of Engines **D. & W. HENDERSON & CO. LTD.**

Works No. **837.M.**

Makers of Main Boilers **D. & W. HENDERSON & CO. LTD.**

Works No. **837.M.**

Makers of Donkey Boiler **D. & W. HENDERSON & CO. LTD.**

Works No. **837.M.**

MACHINERY.



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005344-005352-0209



No.

THE BRITISH CORPORATION FOR THE SURVEY  
AND  
REGISTRY OF SHIPPING.

Report No. .... No. in Register Book .....

Received at Head Office *28<sup>th</sup> January 1929.*

Surveyor's Report on the New Engines, Boilers, and Auxiliary  
Machinery of the ~~Twin~~ <sup>Single Triple</sup> ~~Quadruple~~ Screw STEAMSHIP.

— "CELTIC MONARCH" —

Official No. .... Port of Registry GLASGOW.

Registered Owners RAEURN & VEREL, LIMITED.

Engines Built by D. & W. HENDERSON & CO. LTD.

at GLASGOW.

Main Boilers Built by D. & W. HENDERSON & CO. LTD.

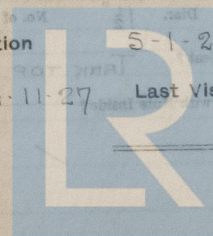
at GLASGOW.

Donkey " " D. & W. HENDERSON & CO. LTD.

at GLASGOW.

Date of Completion 5-1-29.

First Visit 24-11-27 Last Visit 5-1-29 Total Visits 70.



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## RECIPROCATING ENGINES.

Works No. 837 No. of Sets ONE Description

QUADRUPLE EXPANSION, SURFACE CONDENSING, DIRECT ACTING

No. of Cylinders each Engine 4 No. of Cranks 4

Diars. of Cylinders 25", 35½", 51" 72" Stroke 51"

Cubic feet in each L.P. Cylinder 120.16

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

" " " each Receiver? TOP ONLY

Type of H.P. Valves,

" 1st L.P. "

" 2nd L.P. "

" L.P. "

" Valve Gear

" Condenser

Piston

D" SLIDE

ANDREWS &amp; CAMERON

DOUBLE PORTED SLIDE

STEPHENSONS LINK MOTION

BUILT

Cooling Surface 2800 sq. ft.

Diameter of Piston Rods (plain part) 6¾" Screwed part (bottom of thread) 4.743"

Material " INGOT STEEL

Diar. of Connecting Rods (smallest part) 6½" Material Do

" Crosshead Gudgeons 7¼" Length of Bearing 7½" Material Do

No. of Crosshead Bolts (each) 4 Diar. over Thrd. 2¾" Thrds. per inch 6 Material STEEL

" Crank Pin " " 2 " 3¾" " STEEL

" Main Bearings 6 Lengths Nos 1, 3, 4 &amp; 6 = 15½" Nos 2 &amp; 5 = 20¾"

" Bolts in each 2 Diar. over Thread 3" Threads per inch 4 Material STEEL

" Holding Down Bolts, each Engine 128 Diar. 1½" No. of Metal Chocks 1 EA. BOLT + 4 CORNER CHOCKS.

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 THOS. FIRTH & SONS, L<sup>ts</sup>.

Piston " " Do.

Crossheads, " " Do.

Connecting Rods, Finished by D. & W. HENDERSON & C. L<sup>ts</sup>.

Piston " " Do.

Crossheads, " " Do.

Date of Harbour Trial 13-12-28

" Trial Trip 7-1-29.

Trials run at FIRTH OF CLYDE

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

If so, what was the L.H.P.? 3343 (MEAN) Revols. per min. 80

H.P. 82. Pressure in 1st L.P. Receiver, 34 lbs., 2nd L.P., 17 lbs., L.P., 17 lbs., Vacuum, 25 ins.

Speed on Trial 13.9 KNOTS. (Light)

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

data:—

Builders' estimated L.H.P. 2900 Revols. per min. 74

Estimated Speed 11.5 KNOTS. (Loaded.)



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## TURBINE ENGINES.

Works No.	Type of Turbines		
No. of H.P. Turbines	No. of I.P.	No. of L.P.	No. of Astern

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

Is Single or Double Reduction Gear employed?

Diam. of 1st Reduction Pinion	}	Width	Pitch of Teeth
" 1st " Wheel			

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion	}	Width	Pitch of Teeth
" 2nd " Wheel			

Estimated Pressure per lineal inch

Revs. per min. of H.P. Turbines at Full Power	S.H.P.
---	--------

" " I.P. " "

" " L.P. " "

" " 1st Reduction Shaft

" " 2nd " "

" " Propeller Shaft

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial	Knots.	Propeller Revs. per min.	S.H.P.
----------------	--------	--------------------------	--------

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

## DESCRIPTION OF INSTALLATION.



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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

Diam. of 1st Reduction Pinion

" 1st " Wheel

}

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diam. 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

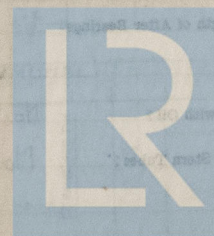
Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

## DESCRIPTION OF INSTALLATION.



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## SHAFTING.

Are the Crank Shafts Built or Solid?

BUILT

No. of Lengths in each 2 Angle of Cranks  $100^{\circ}$ ,  $80^{\circ}$ ,  $100^{\circ}$ ,  $80^{\circ}$ Diar. by Rule 14.5" Actual  $14\frac{7}{8}$ " In Way of Webs  $15\frac{3}{8}$ "" of Crank Pins  $15\frac{1}{4}$ " Length between Webs  $16\frac{1}{4}$ "Greatest Width of Crank Webs  $29\frac{1}{2}$ " Thickness  $10\frac{1}{2}$ "Least " "  $24\frac{1}{2}$ " "  $10\frac{1}{2}$ "Diar. of Keys in Crank Webs 2" Length  $7\frac{1}{2}$ "" Dowels in Crank Pins  $1\frac{1}{4}$ " Length  $2\frac{1}{2}$ " Screwed or Plain SCREWEDNo. of Bolts each Coupling 6 Diar. at Mid Length  $3\frac{1}{2}$ " Diar. of Pitch Circle  $21\frac{1}{2}$ "Greatest Distance from Edge of Main Bearing to Crank Web  $\frac{1}{4}$ "

Type of Thrust Blocks

HORSESHOE

No. " Rings

✓

Diar. of Thrust Shafts at bottom of Collars  $14\frac{7}{8}$ " No. of Collars 9" " Forward Coupling  $14\frac{7}{8}$ " At Aft Coupling  $14\frac{3}{4}$ "

Diar. of Intermediate Shafting by Rule 13.81" Actual 14" No. of Lengths 7

No. of Bolts, each Coupling 6 Diar. at Mid Length  $3\frac{1}{2}$ " Diar. of Pitch Circle  $21\frac{1}{2}$ "Diar. of Propeller Shafts by Rule 15.353" Actual  $16\frac{3}{8}$ " At Couplings  $14\frac{3}{4}$ "

Are Propeller Shafts fitted with Continuous Brass Liners? YES

Diar. over Liners 18" Length of After Bearings 5'-6"

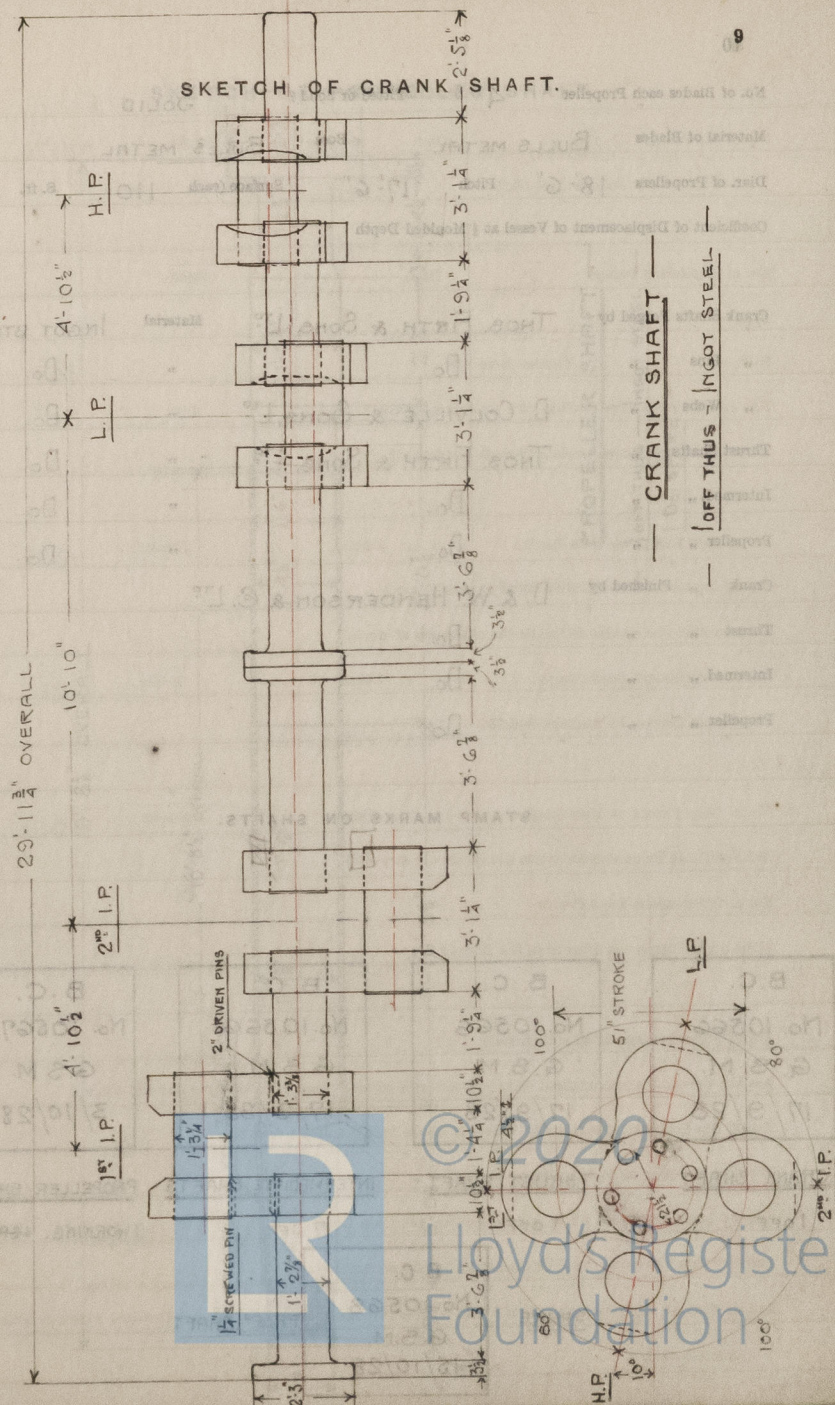
Of what Material are the After Bearings composed? LIGNUMVITAE

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.





No. of Blades each Propeller 4 Fitted or Solid? SOLID  
 Material of Blades BULLS METAL Boss BULLS METAL  
 Diam. of Propellers 18'-6" Pitch 17'-6" Surface (each) 110 S. ft.  
 Coefficient of Displacement of Vessel at  $\frac{1}{2}$  Moulded Depth

Crank Shafts Forged by	THOS. FIRTH & SONS, L <sup>TD</sup>	Material	INGOT STEEL
" Pins "	Do	"	Do.
" Webs "	D. COLVILLE & SONS, L <sup>TD</sup>	"	Do.
Thrust Shafts "	THOS. FIRTH & SONS, L <sup>TD</sup>	"	Do.
Intermed. " "	Do.	"	Do.
Propeller " "	Do.	"	Do.
Crank " Finished by	D. & W. HENDERSON & C. L <sup>TD</sup>		
Thrust " "	Do.		
Intermed. " "	Do.		
Propeller " "	Do.		

STAMP MARKS ON SHAFTS.

B.C.  
No. 10566  
G. S. M.  
17/9/28

CRANK SHAFT

1 OFF

B.C.  
No. 10566  
G. S. M.  
17/9/28

THRUST SHAFT

1 OFF

SPARE

B.C.  
No. 10566  
G. S. M.  
17/9/28

INTERMEDIATE SHAFTS

7 OFF

B.C.  
No. 10567  
G. S. M.  
3/10/28

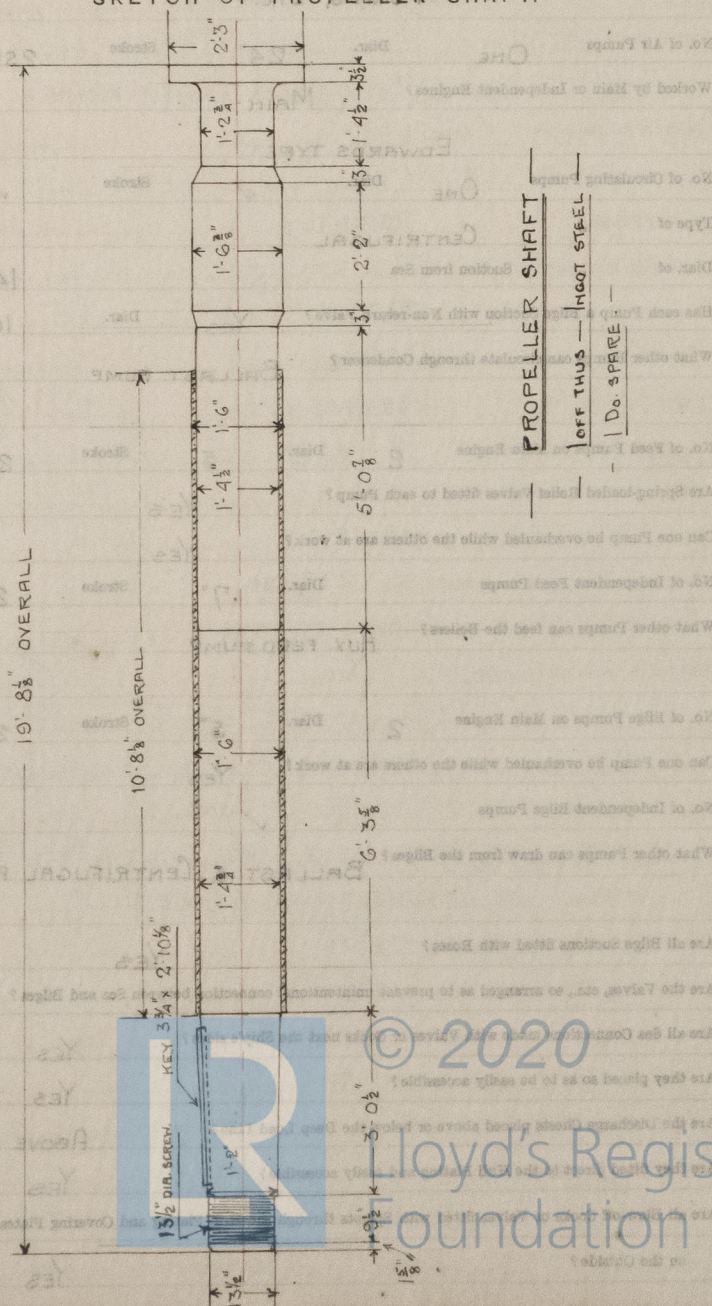
PROPELLER SHAFTS

1 WORKING. 1 SPARE

B.C.  
No. 10568  
G. S. M.  
15/10/28

PROP. SHAFT

# SKETCH OF PROPELLER SHAFT.





## PUMPS, ETC.

No. of Air Pumps **ONE** Diar. **24"** Stroke **25½"**  
 Worked by Main or Independent Engines? **MAIN**  
**EDWARDS TYPE**  
 No. of Circulating Pumps **ONE** Diar. **✓** Stroke **✓**  
 Type of **"** **CENTRIFUGAL**  
 Diar. of **"** **Suction from Sea** **14"**  
 Has each Pump a Bilge Suction with Non-return Valve? **YES** Diar. **10"**  
 What other Pumps can circulate through Condenser? **BALLAST PUMP**  
 No. of Feed Pumps on Main Engine **2** Diar. **5"** Stroke **25½"**  
 Are Spring-loaded Relief Valves fitted to each Pump? **YES**  
 Can one Pump be overhauled while the others are at work? **YES**  
 No. of Independent Feed Pumps Diar. **7"** Stroke **21"**  
 What other Pumps can feed the Boilers? **AUX. FEED PUMP**  
 No. of Bilge Pumps on Main Engine **2** Diar. **5"** Stroke **25½"**  
 Can one Pump be overhauled while the others are at work? **YES**  
 No. of Independent Bilge Pumps **✓**  
 What other Pumps can draw from the Bilges? **BALLAST & CENTRIFUGAL PUMPS.**  
 Are all Bilge Suctions fitted with Roses? **YES**  
 Are the Valves, etc., so arranged as to prevent unintentional connection between Sea and Bilges?  
 Are all Sea Connections made with Valves or Cocks next the Ship's sides? **YES**  
 Are they placed so as to be easily accessible? **YES**  
 Are the Discharge Chests placed above or below the Deep Load Line? **ABOVE**  
 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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## MAIN BOILERS.

Works No. 837 M.

No. of Boilers 2 Type CYLINDRICAL MULTITUBULAR.

Single or Double-ended SINGLE

No. of Furnaces in each 4

Type of Furnaces DEIGHTON

Date when Plan approved 27-2-28

Approved Working Pressure 220 Lbs.

Hydraulic Test Pressure 380 Lbs.

Date of Hydraulic Test SEE PAGE 25

„ when Safety Valves set 13-12-28

Pressure at which Valves were set 225 Lbs

Date of Accumulation Test 13-12-28

Maximum Pressure under Accumulation Test 225 Lbs.

System of Draught CLOSED ASPHITS

Can Boilers be worked separately? Yes.

Makers of Plates D. COLVILLE & SONS, L<sup>TD</sup>

„ (Furnace) THE LEEDS FORGE CO L<sup>TD</sup> (3) & D. COLVILLE & SONS, L<sup>TD</sup> (5)

„ Stay Bars D. COLVILLE & SONS, L<sup>TD</sup>

„ Rivets THE NORTH WEST RIVET, BOLT & NUT FACTORY

„ Furnaces THE DEIGHTON FLUE & TUBE CO. L<sup>TD</sup> @

Greatest Internal Diam. of Boilers 17'-6"

„ „ Length „ 12'-0"

Square Feet of Heating Surface each Boiler 3581.31

„ „ Grate „ „ 80.5

No. of Safety Valves each Boiler 2 Rule Diam. 2½" HIGH LIFT. Actual 2½" HIGH LIFT

Are the Safety Valves fitted with Raising Gear? Yes.

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

„ Test Cocks „ NONE „ Sallinometer Cocks ONE

## DONKEY BOILER

837 M.

1 CYLINDRICAL, MULTITUBULAR.

SINGLE

2

DEIGHTON

27-2-28

100 Lbs.

200 Lbs.

SEE PAGE 25

13-12-28

103 Lbs.

13-12-28

103 Lbs.

NATURAL

D. COLVILLE & SONS, L<sup>TD</sup>

(Furnace plates) THE LEEDS FORGE CO L<sup>TD</sup> (1) & D. COLVILLE & SONS, L<sup>TD</sup> (2)

D. COLVILLE & SONS, L<sup>TD</sup>

THE NORTH WEST RIVET, BOLT & NUT FACTORY

THE DEIGHTON FLUE & TUBE CO. L<sup>TD</sup>

11'-9"

11'-0"

1259.83

37.57

Yes.

ONE

71.5.2.4.8.3

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2

2½" H.L. 2½" HIGH LIFT.

ONE

ONE



Are the Water Gauges fitted direct to the Boiler Shells or mounted on Pillars?

Are the Water Gauge Pillars fitted direct to the Boiler Shells or connected by Pipes?

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 Approved

in Boilers

Are the Rivets Iron or Steel?

Are the Longitudinal Seams Butt or Lap Joints?

Are the Butt Straps Single or Double?

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?

No. of Rivets in a Pitch

Diar. of Rivet Holes  $\frac{5}{8}$ " Pitch

No. of Rows of Rivets in Centre Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diar. of Rivet Holes  $\frac{5}{8}$ " Pitch

No. of Rows of Rivets in Front End Circumferential Seams

Are these Seams Hand or Machine riveted?

Diar. of Rivet Holes  $\frac{5}{8}$ " Pitch

No. of Rows of Rivets in Back End Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diar. of Rivet Holes  $\frac{5}{8}$ " Pitch

Size of Manholes in Shell

Dimensions of Compensating Rings

PILLARS

PIPES

COCKS

VALVES

ONE

2

$\frac{5}{8}$ "

$\frac{1}{8}$ "

STEEL

BUTT

DOUBLE

YES

$\frac{1}{4}$ "

$\frac{3}{8}$ "

MACHINE

TREBLE

5

$10\frac{5}{8}$ "

✓

✓

✓

2

MACHINE

4' 155"

2

MACHINE

4' 155"

16" x 12"

3' 3" x 3' 7" x  $1\frac{5}{8}$ "

PILLARS

PIPES

COCKS

VALVES

ONE

2

$\frac{11}{16}$ "

$\frac{11}{16}$ "

STEEL

LAP

✓

✓

✓

✓

MACHINE

TREBLE

3

$4\frac{1}{32}$ " pitch

✓

✓

✓

2

MACHINE

$1\frac{1}{2}$ " holes

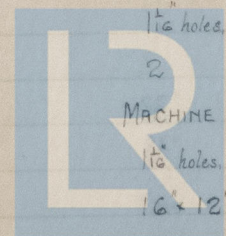
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MACHINE

$1\frac{1}{2}$ " holes

16" x 12"

2' 9 $\frac{1}{2}$ " x 2' 5" x  $1\frac{1}{4}$ "



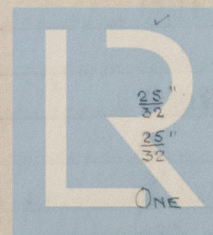
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Thickness of End Plates in Steam Space Approved	$\frac{11}{64}$ "
" " " " " in Boilers	$\frac{11}{64}$ "
Pitch of Steam Space Stays	17" x 17" (MAX.)
Diar. " " " " Approved $2\frac{15}{16}$ " Threads per Inch	6
" " " " " in Boilers $3\frac{1}{8}$ "	6
Material of " " "	STEEL
How are Stays Secured?	DOUBLE NUTS
Diar. and Thickness of Loose Washers on End Plates	$5\frac{1}{2}$ " x $\frac{1}{4}$ "
" " Riveted " " "	✓
Width " " Doubling Strips "	✓
Thickness of Middle Back End Plates Approved	$\frac{31}{32}$ "
" " " " " in Boilers	✓
Thickness of Doublings in Wide Spaces between Fireboxes	✓
Pitch of Stays at " " " "	$7\frac{1}{2}$ " x 8"
Diar. of Stays Approved $1\frac{5}{8}$ " Threads per Inch	9
" " in Boilers $1\frac{5}{8}$ "	9
Material "	STEEL
Are Stays fitted with Nuts outside?	YES
Thickness of Back End Plates at Bottom Approved	$\frac{31}{32}$ "
" " " " " in Boilers $\frac{31}{32}$ "	$\frac{31}{32}$ "
Pitch of Stays at Wide Spaces between Fireboxes	$7\frac{1}{2}$ " x $8\frac{1}{2}$ " x 8"
Thickness of Doublings in " "	✓
Thickness of Front End Plates at Bottom Approved	$\frac{7}{8}$ "
" " " " " in Boilers $\frac{7}{8}$ "	$\frac{7}{8}$ "
No. of Longitudinal Stays in Spaces between Furnaces	ONE

$\frac{25}{32}$ "	Thickness of End Plates Approved
$\frac{25}{32}$ "	" " " " " in Boilers
$18" \times 15\frac{3}{4}"$	Pitch of Steam Space Stays
$1\frac{7}{8}"$	Diar. " " " " Approved 6 Th
$1\frac{7}{8}"$	" " " " " in Boilers 6 Th
STEEL	Material of " " "
DOUBLE NUTS	How are Stays Secured?
✓	Diar. and Thickness of Loose Washers on End Plates
✓	" " Riveted " " "
✓	Width " " Doubling Strips "
$\frac{11}{16}"$	Thickness of Middle Back End Plates Approved
$\frac{11}{16}"$	" " " " " in Boilers
✓	Thickness of Doublings in Wide Spaces between Fireboxes
$8\frac{1}{2} \times 10\frac{3}{4} \times 8\frac{7}{16}"$	Pitch of Stays at " " " "
$1\frac{3}{8}"$	Diar. of Stays Approved 9 Th
$1\frac{3}{8}"$	" " in Boilers 9 Th
STEEL	Material "
YES	Are Stays fitted with Nuts outside?
$\frac{11}{16}"$	Thickness of Back End Plates at Bottom Approved
$\frac{11}{16}"$	" " " " " in Boilers
$8\frac{1}{2} \times 10\frac{3}{4} \times 8\frac{7}{16}"$	Pitch of Stays at Wide Spaces between Fireboxes
✓	Thickness of Doublings in " "
$\frac{25}{32}"$	Thickness of Front End Plates at Bottom Approved
$\frac{25}{32}"$	" " " " " in Boilers
ONE	No. of Longitudinal Stays in Spaces between Furnaces



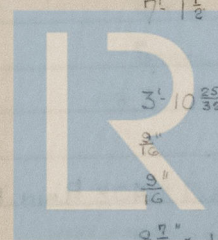
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Diar. of Stays Approved	$2\frac{3}{8}$ "	Threads per Inch	6
" " in Boilers	$2\frac{3}{8}$ "		6
Material "			STEEL
Thickness of Front Tube Plates Approved	$\frac{7}{8}$ "		
" " " " in Boilers	$\frac{7}{8}$ "		
Pitch of Stay Tubes at Spaces between Stacks of Tubes	$7\frac{1}{2}$ "		
Thickness of Doublings in " " "	$\frac{7}{8}$ "		
" Stay Tubes at " " "	$\frac{3}{8}$ " & $\frac{5}{16}$ "		
Are Stay Tubes fitted with Nuts at Front End?	No.		
Thickness of Back Tube Plates Approved	$\frac{13}{16}$ "		
" " " in Boilers	$\frac{13}{16}$ "		
Pitch of Stay Tubes in Back Tube Plates	$7\frac{1}{2}$ "		
" Plain "	$3\frac{3}{4}$ "		
Thickness of Stay Tubes	$\frac{3}{8}$ ", $\frac{5}{16}$ " & $\frac{1}{4}$ "		
" Plain "	8 S.W.G.		
External Diar. of Tubes	$2\frac{1}{2}$ "		
Material "	IRON		
Thickness of Furnace Plates Approved	$\frac{45}{64}$ "		
" " " in Boilers	$\frac{23}{32}$ "		
Smallest outside Diar. of Furnaces	$3' 10\frac{13}{32}"$		
Length between Tube Plates	$8' 0\frac{1}{2}"$		
Width of Combustion Chambers (Front to Back)	$2' 10"$		
Thickness of " " Tops Approved	$\frac{21}{32}$ "		
" " " in Boilers	$\frac{21}{32}$ "		
Pitch of Screwed Stays in O.O. Tops	$8" \times 8\frac{1}{2}"$		

Diag. of Screwed Stays Approved	$1\frac{7}{8}$ "	G.Th.	
" " " " " " " "	$1\frac{7}{8}$ "	G.Th.	
Material	STEEL		
Thickness of Combustion Chamber Plates Approved	$\frac{25}{32}$ "		
" " " " " " " "	$\frac{25}{32}$ "		
Pitch of screw stays in O.O. Side	9"		
Diag. of screw stays in O.O. Side	$\frac{1}{4}$ "		
Material	No.		
Thickness of Combustion Chamber Backs Approved	$\frac{11}{16}$ "		
" " " " " " " "	$\frac{13}{16}$ "		
Pitch of screw stays in O.O. Back	$9" \times 13\frac{1}{2}"$		
Diag. of screw stays in O.O. Back	$4\frac{1}{2}" \times 4\frac{1}{2}"$		
" " " " " " " "	$\frac{1}{4}$ "		
Material	9 W.G.		
Are all screw stays fitted with Nuts inside O.O.	$3\frac{1}{2}"$		
Thickness of Combustion Chamber Bottoms	IRON		
No. of flanges over each Wing Channel	$\frac{7}{16}$ "		
Centre	$\frac{7}{16}$ "		
Diag. and Thickness of Girders	$3' 5\frac{3}{8}"$		
Material of Girders	$7\frac{1}{2}"$		
No. of stays in each	$3' 10\frac{25}{32}"$		
Diag. of stays in each	$\frac{3}{16}$ "		
" " " " " " " "	$\frac{3}{16}$ "		
Diag. of stays in each	$8\frac{7}{16}" \times 10\frac{3}{4}"$		



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Diar. of Screwed Stays Approved	$\frac{5}{8}$ "	Threads per Inch	9
" " " in Boilers	$\frac{5}{8}$ "		9
Material " "			STEEL

Thickness of Combustion Chamber Sides Approved	$\frac{21}{32}$ "		
" " " " in Boilers	$\frac{21}{32}$ "		
Pitch of Screwed Stays in C.O. Sides	$7\frac{1}{2}$ "		
Diar. " " Approved	$\frac{5}{8}$ "	Threads per Inch	9
" " " in Boilers	$\frac{5}{8}$ "		9
Material " "			STEEL

Thickness of Combustion Chamber Backs Approved	$\frac{21}{32}$ "		
" " " " in Boilers	$\frac{21}{32}$ "		
Pitch of Screwed Stays in C.O. Backs	$8" \times 8\frac{1}{2}"$		
Diar. " " Approved	$\frac{5}{8}$ ", $\frac{7}{8}$ ", $2\frac{1}{16}$ "	Threads per Inch	9
" " " in Boilers	$\frac{5}{8}$ ", $\frac{7}{8}$ ", $2\frac{1}{16}$ "		9
Material " "			STEEL

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

Yes

Thickness of Combustion Chamber Bottoms

$\frac{21}{32}$ "

No. of Girders over each Wing Chamber	5
" " " Centre "	3
Depth and Thickness of Girders	$9\frac{3}{4}" \times \frac{3}{4}"$
Material of Girders	STEEL
No. of Stays in each	3

No. of Tubes, each Boiler

408 PLAIN, 152 STAY, 560 TOTAL

Size of Lower Manholes

$16" \times 12"$

Diar. of Screwed Stays Approved	$\frac{5}{8}$ "	Threads per Inch	9 TH.
" " " in Boilers	$\frac{5}{8}$ "		9 TH.
Material " "			STEEL

Thickness of Combustion Chamber Sides Approved	$\frac{21}{32}$ "		
" " " " in Boilers	$\frac{21}{32}$ "		
Pitch of Screwed Stays in C.O. Sides	$8\frac{7}{16}" \times 10\frac{1}{4}"$		
Diar. " " Approved	$\frac{5}{8}$ "	Threads per Inch	9 TH.
" " " in Boilers	$\frac{5}{8}$ "		9 TH.
Material " "			STEEL

Thickness of Combustion Chamber Backs Approved	$\frac{17}{32}$ "		
" " " " in Boilers	$\frac{17}{32}$ "		
Pitch of Screwed Stays in C.O. Backs	$9\frac{3}{4}" \times 9\frac{3}{4}"$		
Diar. " " Approved	$\frac{5}{8}$ ", $1\frac{1}{2}"$ , $1\frac{5}{8}"$	Threads per Inch	9 TH.
" " " in Boilers	$\frac{5}{8}$ ", $1\frac{1}{2}"$ , $1\frac{5}{8}"$		9 TH.
Material " "			STEEL

Yes

$\frac{21}{32}$ "

4

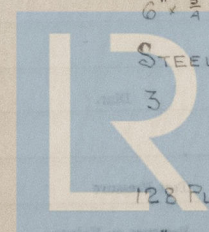
$6" \times \frac{3}{4}"$

STEEL

3

128 PLAIN, 40 STAY, 168 TOTAL

$16" \times 12"$



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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

## STAMP MARKS ON BOILERS

## PORT BOILER

B.C. TEST  
No. 5127  
T.P. 380 Lbs.  
W.P. 220 Lbs.  
G. S. M.  
9/11/28

## STARBOARD BOILER

B.C. TEST  
No. 5125  
T.P. 380 Lbs.  
W.P. 220 Lbs.  
G. S. M.  
1/11/28

## DONKEY BOILER

B.C. TEST  
No. 5126  
T.P. 200 Lbs.  
W.P. 100 Lbs.  
G. S. M.  
1/11/28



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## MAIN STEAM PIPES.

No. of Lengths 2  
 Material STEEL  
 Brazed, Welded or Seamless WELDED  
 Internal Diam.  $6\frac{1}{2}$ "  
 Thickness  $\frac{9}{32}$ "  
 How are Flanges secured? SCREWED & EXP.  
 Date of Hydraulic Test 4-10-28  
 Test Pressure 660 LBS.

No. of Lengths 2  
 Material STEEL  
 Brazed, Welded or Seamless WELDED  
 Internal Diam.  $6\frac{1}{2}$ "  
 Thickness  $\frac{9}{32}$ "  
 How are Flanges secured? SCREWED & EXP.  
 Date of Hydraulic Test 8-12-28  
 Test Pressure 660 LBS.

No. of Lengths  
 Material  
 Brazed, Welded or Seamless  
 Internal Diam.  
 Thickness  
 How are Flanges secured?  
 Date of Hydraulic Test  
 Test Pressure

MADE & FINISHED BY STEWARTS & LLOYDS. L<sup>td</sup>

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## EVAPORATORS.

No. ONE Type CAST IRON, VERTICAL Tons per Day 30  
 Makers H. WATSON & SONS, L<sup>td</sup>  
 Working Pressure Test Pressure Shell 50 Lbs. Date of Test 15-8-28  
 Tubes 560 Lbs.  
 Date of Test of Safety Valves under Steam

## FEED WATER HEATERS.

No. ONE Type DIRECT CONTACT. 21" No. 88518  
 Makers H. WATSON & SONS, L<sup>td</sup> G. & J. WEIR, L<sup>td</sup>  
 Working Pressure 20 Lbs. Test Pressure 40 Lbs. Date of Test 6-8-28

## FEED WATER FILTERS.

No. ONE Type Size  
 Makers H. WATSON & SONS, L<sup>td</sup>  
 Working Pressure 220 Lbs. Test Pressure 540 Lbs. Date of Test 15-8-28

## LIST OF DONKEY PUMPS.

MAIN FEED PUMPS 2 OFF. G. & J. WEIR, L<sup>td</sup>. No. 88519 7' 9 1/2" x 21"  
 SUCTIONS:- AUX. DRAIN TANK. SEA. HOTWELL. FEED HEATER. FRESH WATER TANKS.  
 DISCHARGES:- MAIN & DONKEY BOILERS. FEED FILTER.  
 SERVICE  
 AUX. FEED PUMPS 1 OFF HENRY WATSON & SON. No. 15653. 8' 5" x 8"  
 SUCTIONS:- DRAIN TANK. SEA. BALLAST MAIN. HOTWELL. BOILERS.  
 DISCHARGES:- AUX. CONDENSER. OVERBOARD. DECK. D'KY. B.L.R. M. & A. FEED  
 DONKEY FEED PUMP 1 OFF HENRY WATSON & SON. No. 15654 6 1/2" x 4" x 6"  
 SUCTIONS:- SEA. DONKEY BOILER.  
 DISCHARGES:- DONKEY BOILER. AUX. FEED LINE  
 BALLAST PUMP 1 OFF. HENRY WATSON & SON. No. 15655. 10' 13" x 12"  
 SUCTIONS:- SEA. TANKS. MAIN & INDEPEND. BILGES.  
 DISCHARGES:- M. & AUX. CONDENSERS. OVERBOARD. TANKS.  
 CENTRIFUGAL PUMP 1 OFF (2 ENGINES) DRYSDALE & CO. L<sup>td</sup> Nos. 19581/2. 14" SUCTION  
 (CIRCULATING)  
 SUCTIONS:- SEA. BILGE INJECTION. BALLAST RANGE  
 DISCHARGES:- MAIN & AUXILIARY CONDENSERS, OVERBOARD.

PUMPING ARRANGEMENTS SATISFACTORILY TRIED, 13-12-28.



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## LIST OF SPARE GEAR.

No. of Top End Bolts.	No. of Bot. End Bolts.	No. of Cylinder Cover Studs
2	2	6
" Coupling Bolts 1 SET	" Main Bearing Bolts 2	" Valve Chest "
" Junk Ring Bolts 12	" Feed Pump Valves 1 SUCTION 1 DISCHARGE	" Bilge Pump Valves 1 SUCTION 1 DISCHARGE
" H.P. Piston Rings	" L.P. Piston Rings	" L.P. Piston Rings
" " Springs	" " Springs	" " Springs
" Safety Valve " 1 SET MAIN 1 DONKEY	" Fire Bars 100 MAIN 25 DONKEY	" Feed Check Valves 1 MAIN 1 DONKEY
" Piston Rods	" Connecting Rods	" Valve Spindles
" Air Pump Rods	" Air Pump Buckets	" Air Pump Valves 1 SET
" Cir. "	" Cir. "	" Cir. "
" Crank Shafts	" Crank Pin Bushes 1 PAIR	" Crosshead Bushes
" Propeller Shafts 1	" Propellers 1 (CAST IRON)	" Propeller Blades
" Boiler Tubes 12 MAIN 5 DONKEY	" Condenser Tubes 12	" Condenser Ferrules 25

## OTHER ARTICLES OF SPARE GEAR:—

1 CYLINDER ESCAPE VALVE SPRING  
 1 FEED PUMP DITTO  
 12 GAUGE GLASS RINGS  
 30 BOLTS & NUTS, ASSORTED  
 30 PLATES IRON "  
 5 BARS ROUND IRON,  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ " & 1". 15'-0" LONG  
 3 " FLAT "  $1\frac{1}{4}$ ",  $1\frac{1}{2}$ ",  $\frac{1}{4}$ " &  $2\frac{1}{2}$ " x  $\frac{1}{2}$ "

## REFRIGERATORS



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Line of Tide at High Water	Time of Tide at High Water	Temp. at Tide at High Water	Temp. at Tide at High Water	TEMPERATURE
----------------------------------	----------------------------------	-----------------------------------	-----------------------------------	-------------

Direction of Tide

No. of Steam Cylinders, each Machine

Position of Cylinders in connection with the Reversing Gear and whether they are connected to the

or Reversing Gear

System of Refrigeration

Refrigerator

Articles of Spare Gear for Refrigerating Plant carried on board

Articles of Spare Gear for Refrigerating Plant carried on board

Articles of Spare Gear for Refrigerating Plant carried on board

Articles of Spare Gear for Refrigerating Plant carried on board

Articles of Spare Gear for Refrigerating Plant carried on board

Articles of Spare Gear for Refrigerating Plant carried on board

## ELECTRIC LIGHTING.

Installation Fitted by TELFORD, GRIER & MACKAY, L<sup>ts</sup>.

No. and Description of Dynamos ONE, COMPOUND WOUND PROTECTED TYPE.

Makers of Dynamos BRUCE, REEBLES & CO.

Capacity " 168 Amperes, at 110 Volts, 500 Revs. per Min. 18.5 k/w.

Current Alternating or Continuous CONTINUOUS.

Single or Double Wire System DOUBLE.

Position of Dynamos MAIN ENGINE ROOM, PORT SIDE, ABOVE STARTING PLATFORM.

" Main Switch Board ON BULKHEAD BESIDE DYNAMO.

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

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) CARGO { FOR <sup>W</sup>	47	VARIOUS	16	7/044	1600	100%	600 M.
{ AFT	28	Do.	12	7/044	1200	100%	600 M.
2) NAVIGATION	9	Do.	5	7/036	714	100%	600 M.
3) FORWARD	18	40 Watt.	6.5	7/044	650	100%	600 M.
4) WORKSHOP	-	-	90	19/072	1200	100%	600 M.
5) WIRELESS	-	-	14	7/044	1400	100%	600 M.
6) SALOON	39	VARIOUS	14	7/044	1400	100%	600 M.
7) OFFICERS	44	Do.	15	7/044	1500	100%	600 M.
8) ENGINE ROOM	37	Do.	14	7/044	1400	100%	600 M.

Total No. of Lights 222 No. of Motors driving Fans, &c. 4 No. of Heaters

Current required for Motors and Heaters 90 AMPS.



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

Position of Switch Board	No. of Switches	Notes
On Main Switch Board	12	
On Aux. Switch Board	12	
On Engine Room	12	
On Boiler Room	12	
On Saloon	12	
On State Room	12	
On Deck	12	
On Bulkhead	12	
On Bunkers	12	
On Cargo Spaces	12	
On Engine Room	12	
On Boiler Room	12	
On Saloon	12	
On State Room	12	
On Deck	12	
On Bulkhead	12	
On Bunkers	12	
On Cargo Spaces	12	

Are Out-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

On Aux. Switch Board, to 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 Out-outs constructed of Non-inflammable Material?

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

Smallest Single Wire used, No. 18 S.W.G., Largest, No. 18 S.W.G.

How are Conductors in Engine and Boiler Spaces protected? ARMoured, LEAD COVERED &amp; BRAIDED.

" Saloons, State Rooms, &amp;c., " ? LEAD COVERED &amp; BRAIDED

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp ARMoured &amp; BRAIDED.

(2) " passing through Bunkers or Cargo Spaces

(3) " " Deck Beams or Bulkheads

REAMERED HOLES IN DECK BEAMS.  
PACKED GLANDS IN W/T. BULKHEADS.

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

is unimpaired?

No JOINTS.

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?

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?

2 Meg Ohms.

Is the Installation supplied with a Voltmeter?

Yes

" " " an Ampere Meter?

Yes

Date of Trial of complete Installation 4-1-29

Duration of Trial

6 Hours

Have all the requirements of Section 42 been satisfactorily carried out?

Yes.



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## 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. "CELTIC MONARCH"

as ascertained by me from personal examination

*Geo. S. Macfarlane*  
Engineer Surveyor to the British Corporation for the  
Survey and Registry of Shipping.

## Fees—

## MAIN BOILERS.

	£	s.	d.
H.S. Sq. ft.	:	:	:
G.S. "	:	:	:

## DONKEY BOILERS.

H.S. Sq. ft.	:	:	:
G.S. "	:	:	:
	£	:	:

## ENGINES.

L.P.C. Cub. ft.	:	:	:
	£	:	:
Testing, &c. ...	:	:	:
	£	:	:
Expenses ...	:	:	:
Total ...	£	:	:

It is submitted that this Report be approved.

*J. Green King*  
Chief Surveyor.

Approved by the Committee for the Class of M.B.S.\* on the 6<sup>th</sup> February 1929

Fees advised

Fees paid



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