

No. 1980

THE BRITISH CORPORATION FOR THE SURVEY  
AND  
REGISTRY OF SHIPPING.

Report No. 1853 No. in Register Book 3164

S.S. "Baron Belhaven"

Makers of Engines Messrs D. Rowan & Co. Ltd.

Works No. 802

Makers of Main Boilers (Same.)

Works No. "

Makers of Donkey Boiler —

Works No. —

MACHINERY



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No.

THE BRITISH CORPORATION FOR THE SURVEY

AND

REGISTRY OF SHIPPING.

Report No. *1853* No. in Register Book *3164*

Received at Head Office *15<sup>th</sup> June 1925*

Surveyor's Report on the New Engines, Boilers, and Auxiliary Machinery of the ~~Single Screw~~ *Double* Screw *Steamer*

"*Baron Belhaven*"

Official No. *146720* Port of Registry *Ardrossan*

Registered Owners

*H. Hogarth & Sons*  
*St. Enoch Square, Glasgow.*

Engines Built by

*Messrs David Rowan & Co. Ltd.*

at

*Elliot St., Glasgow*

Main Boilers Built by

*(Same)*

at

Donkey

at

*(none)*

Date of Completion

*12/6/25*

First Visit

*16/4/24*

Last Visit

*12/6/25*

Total Visits

*46*

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## RECIPROCATING ENGINES.

Works No. **802** No. of Sets **One** Description **Triple expansion**

No. of Cylinders each Engine **3** No. of Cranks **3**  
 Diars. of Cylinders **27", 46" and 76"** Stroke **48"**  
 Cubic feet in each L.P. Cylinder **126.01**

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

" " " each Receiver?

Type of H.P. Valves,

" **M.P.**"  
 " **M.P.**"

" L.P. "

" Valve Gear

" Condenser

Diameter of Piston Rods (plain part)

Material

Diar. of Connecting Rods (smallest part)

" Crosshead Gudgeons

No. of Crosshead Bolts (each)

" Crank Pin

" Main Bearings

" Bolts in each

" Holding Down Bolts, each Engine

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

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

If not, how are they fitted?

No. of Cranks

Stroke

**Yes**

**Piston**

**Slide**

**Slide Balance cylinder**

**Stevenson Link Motion**

**Surface**

Cooling Surface **3650** sq. ft.

Screwed part (bottom of thread)

**Steel**

Material

**Steel**

Material

"

Material

**Steel**

"

"

Material

"

No. of Metal Chocks

**Tank top**

**Yes**

Connecting Rods, Forged by

Piston " "

Crossheads,

Connecting Rods, Finished by

Piston " "

Crossheads,

Date of Harbour Trial

" Trial Trip

Trials run at

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

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

Pressure in **H.P.** Receiver,

Speed on Trial

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

data:—

Builders' estimated L.H.P.

Estimated Speed

**Karl & Sons, Düsseldorf**  
**D. Rowan & Co. Ltd.**

**D. Rowan & Co. Ltd.**

**5/6/25.**

**12/6/25**

**Skelmorlie & Firth of Clyde.**

**Yes.**

**2323**

Revs. per min.

**67½**

**201** lbs.,

**M.P.** **56** lbs.,

L.P.,

**7½** lbs.,

Vacuum, **28½** ins.

**11.69** Knots.

**2600**

Revs. per min.

**65**

Tested H.P. cyl. at 300 lb./sq. hyd. 10/2/25.

"**Contraflo**" patent aux. condenser **1880**



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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?

Diar. of 1st Reduction Pinion

" 1st " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diar. of 2nd Reduction Binion

2nd Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Revol. 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 Revols. 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.

Type of Turbine Shafts  
 No. of Turbine Shafts  
 Diam. of Turbine Shafts at bottom of Bolts  
 At Air Coupling  
 Forward Coupling  
 Diam. of Intermediate Shafting by Pinion  
 Actual  
 No. of Bolts each Coupling  
 Diam. at Mid Length  
 Diam. of Propeller Shafts by Pinion  
 Actual  
 Are Propeller Shafts fitted with continuous thrust liners?  
 Diam. over Liners  
 Length of Air Propellers  
 Of what Material are the Air Propellers composed?  
 Are Means provided for adjusting the Air Propellers with Oil?  
 Is there any Water entering the Stern Tubes?  
 Is the Water entering the Stern Tubes?



Greatest Width of Web  
 $2\frac{1}{4}$   
 $6\frac{1}{4}$  8  
 15  
 28  $\frac{1}{8}$ "



$t = 438 \times 14.875 = 6.52$   
 $t = 438 \times 15 = 6.57$

# SHAFTING.

# SKETCH OF CRANK SHAFT.

Are the Crank Shafts Built or Solid? *Built*

No. of Lengths in each *3* Angle of Cranks *120°*

Diar. by Rule *14.32"* Actual *14  $\frac{5}{8}$ "* In. Way of Webs *14  $\frac{3}{8}$ "*

" of Crank Pins *15"* Length between Webs *15"*

Greatest Width of Crank Webs *2'-4"* Thickness *9  $\frac{1}{4}$ "*

Least " " *14  $\frac{3}{4}$ "* " " " "

Diar. of Keys in Crank Webs *2  $\frac{1}{2}$ "* Length *6"*

" Dowels in Crank Pins *1  $\frac{1}{4}$ "* Length *4"* Screwed or Plain *Plain*

No. of Bolts each Coupling *6* Diar. at Mid Length *3  $\frac{7}{8}$ "* Diar. of Pitch Circle *20  $\frac{1}{2}$ "*

Greatest Distance from Edge of Main Bearing to Crank Web *1  $\frac{1}{4}$ "*

Type of Thrust Blocks *Adjustable Horse-Shoe.*

No. " *Shoes*  
*Rings*

Diar. of Thrust Shafts at bottom of Collars *14  $\frac{3}{8}$ "* No. of Collars *8*

" " Forward Coupling *14  $\frac{5}{8}$ "* At Aft Coupling *14  $\frac{5}{8}$ "*

Diar. of Intermediate Shafting by Rule *13.6"* Actual *13  $\frac{3}{8}$ "* No. of Lengths *6*

No. of Bolts, each Coupling *6* Diar. at Mid Length *3  $\frac{7}{8}$ "* Diar. of Pitch Circle *20  $\frac{1}{2}$ "*

Diar. of Propeller Shafts by Rule *15.88* Actual *16  $\frac{9}{16}$ "* At Couplings

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? *Lignum Vitae.*

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

" " to prevent Sea Water entering the Stern Tubes? *"*

If so, what Type is adopted? *—*



Rule: - 14.32"

Ahead Surface = 1464 □"

FEB 1943

ONE COMPLETE NEW  
 By BARCLAY CURLE & CO  
 FORGINGS BY DENNYSTOWN  
 STAMP MARKS: -

L.P. CRANK MADE  
 G/N° S.O. 54  
 FORGE.

COUPLING ENDS & CRANKPIN

B.C.  
 W.S.S.  
 868  
 2-2-43

WEBS  
 B.C.  
 F.W.F.  
 869  
 29-1-43

(F)  
 25-2-43

Webs gas cut profile by Charles Hild at  
 finished machined by Barclay Curle & Co.



No. of Blades each Propeller *4* Fitted or Solid? *Fitted.*  
 Material of Blades *Bronze.* Boss *Cast iron.*  
 Diam. of Propellers *18'-3"* Pitch *19'-0"* Surface (each) *111* S. ft.  
 Coefficient of Displacement of Vessel at  $\frac{1}{2}$  Moulded Depth

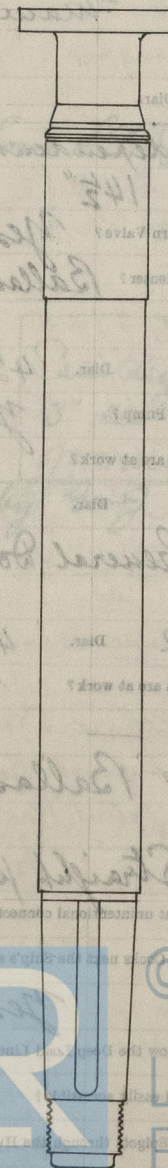
Crank Shafts Forged by *Haniel & Lueg,* Material *I. S.*  
 " Pins " " " "  
 " Webs " " " "  
 Thrust Shafts " " " "  
 Intermed. " " " "  
 Propeller " " " "  
 Crank " Finished by *D. Rowan & Co. Ltd.*  
 Thrust " " " "  
 Intermed. " " " "  
 Propeller " " " "

## STAMP MARKS ON SHAFTS.

B. C.  
 3264  
 J. W. H.  
 26/2/25.

1 crank shaft  
 1 thrust "  
 6 tunnel shafts  
 2 tail shafts

## SKETCH OF PROPELLER SHAFT.





## PUMPS, ETC.

No. of Air Pumps *One* Diar. *2'-2"* Stroke *2'-2"*

Worked by Main or Independent Engines? *Main.*

No. of Circulating Pumps *One* Diar. Stroke

Type of " *Independent Centrifugal by*

Diar. of " Suction from Sea *14½"*

Has each Pump a Bilge Suction with Non-return Valve? *Yes.* Diar. *10"*

What other Pumps can circulate through Condenser? *Ballast and General Donkey.*

No. of Feed Pumps on Main Engine *2* Diar. *4½"* Stroke *2'-2"*

Are Spring-loaded Relief Valves fitted to each Pump? *Yes.*

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

No. of Independent Feed Pumps *2* Diar. Stroke

What other Pumps can feed the Boilers? *General Donkey & Harbour Donkey.*

No. of Bilge Pumps on Main Engine *2* Diar. *4½"* Stroke *2'-2"*

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.*

Are all Bilge Suctions fitted with Roses? *Straight pipe with mud box*

Are the Valves, etc., so arranged as to prevent unintentional connection between Sea and Bilges? *Yes.*

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? *Below, main & aux. injections*

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.*

*Henry Watson & Sons Ltd.* 14094

75480 75480 by *S. J. Weir Ltd.*

*Sanitary plunger pump  
3" dia x 1'-3" stroke  
off main engines*



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## BOILERS.

Works No. **802**

No. of Boilers **3** Type **Cylindrical multitubular.**

Single or Double-ended **Single**

No. of Furnaces in each **3**

Type of Furnaces **Deighton**

Date when Plan approved **15/4/24**

Approved Working Pressure **200 lb/□"**

Hydraulic Test Pressure **350 "**

Date of Hydraulic Test **10/3/25**

" when Safety Valves set **5/6/25**

Pressure at which Valves were set **206 lb/□"**

Date of Accumulation Test **5/6/25**

Maximum Pressure under Accumulation Test **217 lb/□"**

System of Draught **Forced.**

Can Boilers be worked separately? **Yes.**

Makers of Plates **Mannesmannrohrwerke, Düsseldorf.**

" Stay Bars **Lancashire Steel Co. Ltd. ✓**

" Rivets **North West Rivet, Bolt & Nut Factory,**

" Furnaces **Deighton's Patent Flue & Tube Co. Ltd.**

Greatest Internal Diam. of Boilers **16'-1 7/32"**

" " Length " **11'-11 1/4"**

Square Feet of Heating Surface each Boiler **2834**

" " Grate " " **60**

No. of Safety Valves each Boiler **One pair** Rule Diam. **3 1/4"** Actual **3 1/4"**

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

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

" Test Cocks " **—** " Salinometer Cocks **One.**

B. C. TEST

4904

350 lbs

WP 200 lbs

J. W. H.

10/3/25

Weight of water, (one boiler) = 30 tons.

Steam space, " " " = 574 cub. ft.

Rings; -

Port boiler. Centre boiler. Starboard boiler.

P. 1/2" S. 3/2" P. 3/2" S. 3/2" P. 1/2" S. 3/2"

Air pressures; - Port 1/2", Centre 3/8", Starboard 3/8".

Howden's installation **8870**

Tubes by Scottish Tube Co. Ltd.

Plates by The Leeds Forge Co. Ltd.



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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

Diam. of Rivet Holes  $1\frac{1}{2}"$  Pitch

No. of Rows of Rivets in Centre Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diam. of Rivet Holes — Pitch

No. of Rows of Rivets in Front End Circumferential Seams

Are these Seams Hand or Machine riveted?

Diam. of Rivet Holes  $1\frac{5}{16}"$  Pitch

No. of Rows of Rivets in Back End Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diam. of Rivet Holes  $1\frac{1}{2}"$  Pitch

Size of Manholes in Shell

Dimensions of Compensating Rings

Pillars.  
Direct.

No. valves on back ends.

One

3

$1\frac{15}{32}"$

"

Steel.

Butt.

Double.

Yes.

$1\frac{1}{8}"$

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

Machine.

Treble.

5

$10\frac{1}{4}"$

—

—

—

2

Hand

$3.4"$

2

Machine.

$4.19"$

$16" \times 12"$

$3'-0\frac{1}{2}" \times 2'-8\frac{1}{2}"$



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Thickness of End Plates in Steam Space Approved

 $1 \frac{15}{32}$ "

" " " " " in Boilers

"

Pitch of Steam Space Stays

(See opposite.)  
2 @  $3 \frac{1}{2}$ " marked  $\otimes$   
8 @  $3 \frac{1}{4}$ " Threads per inch

6

Diar. " " " " Approved

" " " " " in Boilers

Steel.

Material of " " "

How are Stays Secured?

Nuts inside &amp; outside.

Diar. and Thickness of Loose Washers on End Plates

none

" " Riveted " " "

"

Width " " Doubling Strips "

"

Thickness of Middle Back End Plates Approved

 $5 \frac{7}{64}$ "

" " " " " in Boilers

"

Thickness of Doublings in Wide Spaces between Fireboxes

none.

Pitch of Stays at

" " " "

 $1 \frac{1}{2}$ " x  $8 \frac{5}{8}$ "

Diar. of Stays Approved

2"

Threads per Inch

10

" " " in Boilers

"

"

Material "

Steel.

Are Stays fitted with Nuts outside?

Yes.

Thickness of Back End Plates at Bottom Approved

 $5 \frac{7}{64}$ "

" " " " " in Boilers

"

Pitch of Stays at Wide Spaces between Fireboxes

widening.

Thickness of Doublings in " "

none.

Thickness of Front End Plates at Bottom Approved

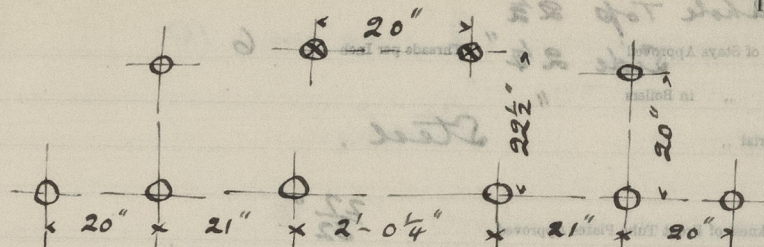
 $7 \frac{7}{8}$ "

" " " " " in Boilers

"

No. of Longitudinal Stays in Spaces between Furnaces

3 each side.



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Manhole Top  $2\frac{1}{2}"$

Diur. of Stays Approved  $2\frac{1}{4}"$  Threads per Inch 6

" " in Boilers

Material

Steel

Thickness of Front Tube Plates Approved

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

" " " in Boilers

Pitch of Stay Tubes at Spaces between Stacks of Tubes

$1'-1\frac{1}{2}" \times 7\frac{1}{4}"$

Thickness of Doublings in

none

" Stay Tubes at

$\frac{3}{8}"$

Are Stay Tubes fitted with Nuts at Front End?

Yes

Thickness of Back Tube Plates Approved

$2\frac{5}{32}"$

" " " in Boilers

Pitch of Stay Tubes in Back Tube Plates

$11\frac{1}{4}" \times 9\frac{1}{16}"$

" Plain

$3\frac{3}{4}" \times 3\frac{5}{8}"$

Thickness of Stay Tubes

$\frac{3}{8}"$

" Plain

8 w.g.

External Diur. of Tubes

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

Material

Lapwelded iron

Thickness of Furnace Plates Approved

$4\frac{5}{64}"$

" " " in Boilers

Smallest outside Diur. of Furnaces

$4'-1\frac{13}{32}"$

Length between Tube Plates

$7'-10"$

Width of Combustion Chambers (Front to Back)

$3'-4"$  outside

Thickness of " " Tops Approved

$\frac{11}{16}"$

" " " in Boilers

"

Pitch of Screwed Stays in O.C. Tops

$9\frac{1}{4}" \times 8\frac{3}{4}"$

01 18

Thin of Screwed Stays Approved

" " in Boilers

Material

Steel

Thickness of Combustion Chamber Plates Approved

" " in Boilers

Pitch of Screwed Stays in O.C. Tops

Thin " " Approved

" " in Boilers

Material

Steel

Thickness of Combustion Chamber Plates Approved

" " in Boilers

Pitch of Screwed Stays in O.C. Tops

Thin " " Approved

" " in Boilers

Material

Steel

Are all screw stays fitted with Nuts inside O.C.?

Thickness of Combustion Chamber Bottoms

No. of Stays over each Wing Chamber

" " " " " "

Depth and Thickness of Stays

Material of Stays

No. of Stays in each

No. of Tubes in each Boiler

Size of Lower Manholes

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Diar. of Screwed Stays Approved

 $\frac{1}{8}$ " Threads per Inch 10

" " " in Boilers

"

Material " "

Steel.

Thickness of Combustion Chamber Sides Approved

 $\frac{11}{16}$ "

" " " " in Boilers

"

Pitch of Screwed Stays in C.C. Sides

 $9\frac{1}{4}" \times 8\frac{3}{4}"$ 

Diar. " " Approved

 $\frac{1}{8}$ " Threads per Inch 10

" " " in Boilers

"

Material " "

Steel.

Thickness of Combustion Chamber Backs Approved

 $\frac{21}{32}$ "

" " " " in Boilers

"

Pitch of Screwed Stays in C.C. Backs

 $8\frac{5}{8}" \times 8\frac{1}{2}"$ 

Diar. " " Approved

 $\frac{1}{4}$ " Threads per Inch 10

" " " in Boilers

"

Material " "

Steel.

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

Yes.  
 $\frac{13}{16}$ "

Thickness of Combustion Chamber Bottoms

No. of Girders over each Wing Chamber

4

" " " Centre "

3

Depth and Thickness of Girders

 $9\frac{3}{8}" \times \frac{7}{8}"$  double.  
Steel plates.

Material of Girders

No. of Stays in each

3

No. of Tubes, each Boiler

460

Size of Lower Manholes

 $16" \times 12"$ 

## VERTICAL DONKEY BOILERS

No. of Boilers  
Type  
Grossed In. Diam.  
Height  
Height of Boiler Crown above Fire Grate  
Are Boiler Crown Flat or Dished?  
Internal Radius of Dished Ends  
Description of Booms in Boiler Crown  
Diam. of Rivet Holes  
Width of Overlap  
Height of Flange (Crown above Fire Grate)  
Are Flange Crown Flat or Dished?  
External Radius of Dished Crown  
No. of Crown Stays  
Diam.  
Material  
Thickness of Flange  
External Diam. of Flange at Top  
Bottom  
No. of Water Tubes  
Esl. Diam.  
Thickness  
Material of Water Tubes  
Size of Manhole in Shell  
Dimensions of Compensating Ring  
Internal surface each boiler  
Grate Surface

## SUPERHEATERS

Description of Superheaters

Where situated?

What Boilers are connected with Superheaters?  
Can Superheaters be shut off while Boilers are working?

No. of Safety Valves on each Superheater

Date of Examination

Date when safety Valves set



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McNeil door.



## VERTICAL DONKEY BOILERS.

No. of Boilers Type

Greatest Int. Diam. 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

Diam. 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 Diam. Material

External Diam. of Firebox at Top Bottom Thickness of Plates

No. of Water Tubes Ext. Diam. 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 Diam.

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

Welded, Welded or Seamed

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

No. of Lengths

Material

Welded, Welded or Seamed

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure



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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

4  
Steel.  
Welded.  
5"  
4"

(JW)  
H

Sc'd exp'd.

1 length (no. 100) 15/5/25; 3 lengths 3/6/25. (no. 100-101-102)  
600 lb/sq" hyd.

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

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

Vertical separator  
J.H. Connors  
Date of Test 19/1/25  
Working Pressure 22 lb/sq"  
Test Pressure 400 lb/sq"  
by same maker.

FEED WATER HEATERS  
No. One Type  
Date of Test 13/5/25  
Working Pressure 20 lb/sq"  
Test Pressure 40 lb/sq"  
by same maker.

FEED WATER FILTERS  
No. One Type  
Date of Test  
Working Pressure  
Test Pressure

STEERING GEAR  
Date of Test  
Working Pressure  
Test Pressure



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## EVAPORATORS.

75481

No. One Type Vertical merchant service Tons per Day 30  
 Makers B. & J. Weir Ltd.  
 Working Pressure 25 lb/sq. in. Test Pressure 50 lb. Date of Test 19/1/25.  
tubes 400 "  
 Date of Test of Safety Valves under Steam 12/6/25. (G)

## FEED WATER HEATERS.

75479

No. One Type Direct Contact  
 Makers B. & J. Weir Ltd.  
 Working Pressure 20 lb/sq. in. Test Pressure 40 lb. Date of Test 13/2/25.  
G. M. L.

## FEED WATER FILTERS.

695

No. One Type "Cascade" (gravity) Size  
 Makers Contraflo Eng'ng Co. Ltd., London.  
 Working Pressure — Test Pressure — Date of Test —

## STEERING GEAR.

3879

One horiz. 2 cyl. worm + wheel to spur +  
quadrant gear, by Bow M<sup>r</sup> Lachlan & Co.  
Ltd., Paisley. (Fitted with Telemotor Gear.)

## LIST OF DONKEY PUMPS.

Ballast; vert. dup. 10" x 12" x 12" 6984 by  
J.H. Carnuthers & Co. Ltd.

General Service; vert. dup. 7½" x 5" x 10" 6983  
 by same makers.

Harbour; vert. dup. 5" x 3½" x 8" 6986 by  
 same makers.

(For Independent Circulating & Feed pumps,  
 See p.p. 12-13.)

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## SPARE GEAR

No. of Top End Bolts. 2	No. of Bot. End Bolts. 2	No. of Cylinder Cover Studs 6
" Coupling Bolts 12	" Main Bearing Bolts 2	" Valve Chest " 6
" Junk Ring Bolts 12	" Feed Pump Valves 4	" Bilge Pump Valves 2
" H.P. Piston Rings } one set	" I.P. Piston Rings } one set	" L.P. Piston Rings
" " Springs	" " Springs	" " Springs
" Safety Valve " 2	" Fire Bars Set for 1 boiler	" Feed Check Valves 6 main 6 aux:
" Piston Rods	" Connecting Rods	" Valve Spindles One H.P. one L.P.
" Air Pump Rods 1	" Air Pump Buckets	" Air Pump Valves 18
" Cir. " 1	" Cir. "	" Cir. "
" Crank Shafts	" Crank Pin Bushes One	" Crosshead Bushes 2
" Propeller Shafts 1	" Propellers —	" Propeller Blades 1
" Boiler Tubes 24	" Condenser Tubes 36	" Condenser Ferrules 100

## OTHER ARTICLES OF SPARE GEAR:—

One eccentric strap.  
 One bush for pump links, pump end.  
 " " " " " engine "  
 100 Condenser tube packings.  
 One cot. bolts & nuts assorted.  
 36 bolts, nuts & washers "  
 6 bars iron  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{7}{8}$ , and 1" dia, each about 12'-0" long.  
 3 bars iron flat  $1 \times \frac{1}{4}$ ,  $1\frac{1}{2} \times \frac{1}{4}$ , and  $2\frac{1}{2} \times \frac{1}{2}$  each about 12'-0" long.  
 6 iron plates, each 3'-0" square  $\frac{1}{16}$ ,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ , and  $\frac{5}{8}$  thick.  
 12 copper washers for piston junk ring bolts.  
 One spring for cylinder escape valve.  
 3 double rubbing rings & springs (Beldams) for H.P. piston rod.  
 3 " " " " " M.P. or L.P. "  
 One brass impeller for centrifugal pump.  
 One set furnace front baffles for one boiler.

## Patterns for firebars &amp; baffles.



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## REFRIGERATORS.

No. of Machines

Capacity of each

Makers

Description

No. of Steam Cylinders, each Machine

No. of Compressors

No. of Cranks

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

System of Refrigeration

,, Insulation

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

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.
Navigation	11	8	7/10	1143
Up. Room	32	12		1714
Midship	51	13		1857
Saloon	41	20		1143
Forward	29	9		1300
W/T		12		1430

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



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Dynamo direct-coupled to 2 Cyl. Comp.  
eng. **1127** by Caldwell & Co.

## ELECTRIC LIGHTING.

Installation Fitted by Telford, Grier & Mackay Ltd.  
 No. and Description of Dynamo One 13.2 Kw. Comp. wound **23906**  
 Makers of Dynamo J. H. Holmes & Co. Newcastle.  
 Capacity 120 Amperes, at 110 Volts, 343 Revs. per Min.  
 Current Alternating or Continuous Continuous.  
 Single or Double Wire System Double.  
 Position of Dynamo Starb'd. side, eng. room, bottom platform.  
 „ Main Switch Board „ „ „ „  
 No. of Circuits to which Switches are provided on Main Switch Board 6 and 1 motor  
 Particulars of these Circuits:— circuit taken from bus bars.

Circuit.	Number of Lights.	Candle Power.	Current Required. Amps.	Size of Conductor.	Current Density.	Conductivity of Conductor.	Insulation Resistance per Mile.
Navigation	11	various	8	7/20	1143	100%	600 M
Eng. Room.	32	"	12	"	1714	"	"
Midship	51	"	13	"	1857	"	"
Saloon	41	20	8	"	1143	"	"
Forward.	29	various	9	"	1300	"	"
W/T.			10	"	1430	"	"
Motor			15	"	2143	"	"

Total No. of Lights 164 No. of Motors driving Fans, &c. One No. of Heaters

Current required for Motors and Heaters 15 amps.

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

*(none.)*

23906

Are Out-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

*Yes.*

On Aux. " " each Auxiliary Circuit

*Yes.*

Wherever a Cable is reduced in size

*Yes.*

To each Lamp Circuit

*Yes.*

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

*Yes.*

Are the Fuses of Standard Sizes?

*Yes.*

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

*Yes.*

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

*Yes.*

Smallest Single Wire used, No.

*17*

S.W.G.,

Largest, No.

*17*

S.W.G.

How are Conductors in Engine and Boiler Spaces protected?

*Lead covered & armoured.*

" " Saloons, State Rooms, &amp;c., " "

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp

*L. C. & A.*

(2) " " passing through Bunkers or Cargo Spaces

*Tubing.*

(3) " " Deck Beams or Bulkheads

*W.T. glands in bulk-heads.*

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?

*1.6 Meg Ohms.*

Is the Installation supplied with a Voltmeter?

*Yes.*

" " " an Ampere Meter?

*Yes.*

Date of Trial of complete Installation

*12/6/25*

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.

*"Baron Belhaven"*

as ascertained by <sup>me</sup> from personal examination

*J. Wood Harrington.*  
Engineer Surveyor to the British Corporation for the  
Survey and Registry of Shipping.

$$\frac{200}{180} = \frac{x}{8502} \quad x = 9446.6 + 25\% = 11808.3 \text{ £.}$$

Fees—

MAIN BOILERS.		F.D.	£	s.	d.
H.S.	8502	Sq. ft.	40	15	2½
G.S.	180	"	:	:	:
DONKEY BOILERS.					
H.S.	(none)	Sq. ft.	:	:	:
G.S.	"	"	:	:	:
		£	:	:	:

65 reos.

## ENGINES.

L.P.C.	126.01	Cub. ft.	65	4	—
		£	:	:	:
Testing, &c. ...		:	:	:	:
		£	:	:	:
Expenses ...		:	:	:	:
Total ...		£	:	:	:

It is submitted that this Report be approved,

*James Barr*

for

Chief Surveyor.

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

*26<sup>th</sup> August 1915*

Fees advised

Fees paid



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27/3/25

1/4/25

10 "

21 "

22 " (G.M.L.)

23 " (ship)

27 "

29 "

7/5/25 (and ship)

8 " (G.M.L.)

11 "

15 "

29 " (ship)

2/6/25

3 "

5 " (ship)

11 "

12 " (trial trip)



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27/3/25

1/4/25

10 "

21 "

22 " (S.M.L.)

23 " (Ship)

27 "

29 "

7/8/25 (and ship)

8 " (S.M.L.)

9 "

10 "

11 "

12 "

13 "

14 "

15 "

16 "

17 "



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