

No. 1487

TRANSFERRED TO
L.R. SYSTEM

THE BRITISH CORPORATION FOR THE SURVEY

AND

N/N
Lancaster

REGISTRY OF SHIPPING.

RETAIN

Report No.

1344

No. in Register Book

2278

Now "WESTERN COAST"

Mar. Liven Lady Patricia Lady Emerald
Mar. Spey Mar. Garry

S.S. Dundee

Cortis

Mar. Wensum
Makers of Engines

Mar. Waverney

Calidon 516 60 Ld.

465, 466, 467, 468-469

Works No.

Makers of Main Boilers

See Page 145

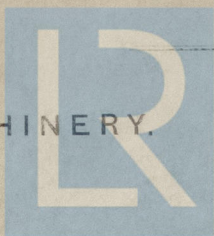
Works No.

Makers of Donkey Boiler

None?

Works No.

MACHINERY.



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004184-004193-0080

No.

THE BRITISH CORPORATION FOR THE SURVEY

AND

REGISTRY OF SHIPPING.

Report No. *1344* No. in Register Book *2278*

Received at Head Office

Surveyor's Report on the *Single Triple* Engines, Boilers, and Auxiliary
Machinery of the *Twin Quadruple Screw* *War. Leven*

Official No.

Port of Registry

Registered Owners

Engines Built by

The Caledon S/B & Eng Co

at

Dunrobin

Main Boilers Built by

The Caledon S/B & Eng Co

at

Dunrobin

Donkey

"

*For allocation of Machinery
for other Ships See Page 45*

Date of Completion

March 1902

First Visit

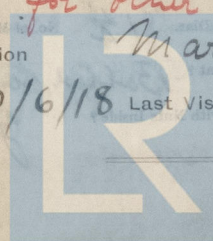
10/6/18

Last Visit

17-3-19

Total Visits

57



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RECIPROCATING ENGINES.

Works No. **465** No. of Sets **1** Description **Triple expansion**

Surface Condensing

No. of Cylinders each Engine **3** No. of Cranks **3**
Diars. of Cylinders **21 x 34 x 56** Stroke **39**

Cubic feet in each L.P. Cylinder **555.6**

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

Yes
yes

" " " each Receiver?

Type of H.P. Valves,

Piston

" 1st L.P. "

Martin

Andrews.

" 2nd L.P. "

" L.P. "

Slide

" Valve Gear

Stephenson Link

" Condenser **Cylindrical, Surface.**

Cooling Surface **2303** sq. ft.

Diameter of Piston Rods (plain part)

5 1/2"

Screw part (bottom of thread) **4 1/4"**

Material

Steel

Diar. of Connecting Rods (smallest part)

5 1/2"

Material

Steel

" Crosshead Gudgeons

6 1/4" Length of Bearing

7 1/8

Material

Steel

No. of Crosshead Bolts (each)

4 Diar. over Thrd.

2 1/2

Thrds. per inch

6

Material

Steel

" Crank Pin

2

3 1/4

"

6

"

Steel

" Main Bearings

6

Lengths

12 1/2"

" Bolts in each

2

Diar. over Thread

2 1/2

Threads per inch

6

Material

Steel

" Holding Down Bolts, each Engine

75

Diar.

1 1/4"

No. of Metal Chocks

75

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

Bolted to 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 **M. Hingley & Sons, Dudley.**

Piston " "

Crossheads,

Wm Somers & Coy Ltd Newcastle.

Connecting Rods, Finished by

The Caledon SSB Coy.

Piston " "

DO

Crossheads,

465

DO 466

467

468.

Eng No 469.

Date of Harbour Trial

14-3-19, 18-4-19, 16-5-19, 18-6-19, 22-7-19

" Trial Trip

15-3-19, 22-4-19, 21-5-19, 20-6-19, 24-7-19

Trials run at

Dunrobin

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

(Mean) (Mean) (Mean) Mean Yes.

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

1740, 1621, 1933, 2031 Revols. per min. **106, 103, 107.**

Pressure in 1st L.P. Receiver,

lbs, 2nd L.P.,

64

lbs, L.P.,

12

lbs, Vacuum,

27.5 ins.

Speed on Trial

13.91

12.85

13.3

75

11

28

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

data:—

Builders' estimated I.H.P.

1620

Revs. per min.

106.

Estimated Speed

12 Knots

Eng 465

Entered in

Blue.

Eng 466

Entered in

Red.

Eng 467

Entered in

Black.

Eng 468

Entered in

?

Eng 469

I.H.P. 1937.6

Revs per min 110

Pressures 130, 185 H.P. 175 I.P. 69 L.P. 57 VAC 27 MEAN SPEED 13.43

Engines No 515 built by Dunrobin & Jackson.

Pressures 130, 184 H.P. 176 I.P. 73 L.P. 12 VAC 26 MEAN SPEED 12.57 Revs 108



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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?

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

"	"	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

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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TURBINE ENGINE

No. of Turbine _____
 No. of H.P. Turbine _____
 No. of I.P. _____
 No. of A.P. _____

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

In which is Double Reduction Gear employed?

Describe the nature of H.P. Turbine at full power

" " " " " "

" " " " " "

" " " " " "

" " " " " "

Propeller Shaft

Total Shaft Horse Power

Date of Harbord Trial

" " " " " "

Test run at

Speed in RPM

Turbine shafts turned by

" " " " " "

Reduction Gear shafts turned by

" " " " " "

DESCRIPTION OF INSTALLATION

TURBO-ELECTRIC PROPELLING MACHINE

No. of Turbo-Compressor _____

Capacity of each _____

Type of Turbine employed _____

Description of Installation _____

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

In which is Double Reduction Gear employed?

Describe the nature of H.P. Turbine at full power

" " " " " "

No. of Motors driving Propeller Shafts

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

In which is Double Reduction Gear employed?

Description of Motors

Describe the nature of Installation at full power

" " " " " "

" " " " " "

Total Shaft Horse Power

Date of Harbord Trial

" " " " " "



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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

Revs. per min. of Generators at Full Power

" " Motors "

" " Propellers "

Total Shaft Horse Power "

Date of Harbour Trial

" Trial Trip

Trials run at

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



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SHAFTING.

Are the Crank Shafts Built or Solid?

Built

No. of Lengths in each

5

Angle of Cranks

120°

Diar. by Rule

10-9"

Actual

11 1/2"

In Way of Webs

11 1/2"

" of Crank Pins

11 1/2"

Length between Webs

13 3/4"

Greatest Width of Crank Webs

20 3/4"

Thickness

8"

Least

" "

20 3/4"

"

8

Diar. of Keys in Crank Webs

1/4 Screwed

Length

5

" Dowels in Crank Pins

1 3/4

Length

5

Screwed or Plain

Plain

No. of Bolts each Coupling

6

Diar. at Mid Length

2 3/4"

Diar. of Pitch Circle

17"

Greatest Distance from Edge of Main Bearing to Crank Web

3/8

Type of Thrust Blocks

Horse Shoe Type

No. " Rings

Six

Diar. of Thrust Shafts at bottom of Collars

11 1/2"

No. of Collars

6

" " "

Forward Coupling

11 1/2"

At Aft Coupling

11 1/2"

Diar. of Intermediate Shafting by Rule

10.35"

Actual

11

No. of Lengths

3

No. of Bolts, each Coupling

6

Diar. at Mid Length

2 3/4"

Diar. of Pitch Circle

17

Diar. of Propeller Shafts by Rule

11.38"

Actual

12

At Couplings

12 1/2"

Are Propeller Shafts fitted with Continuous Brass Liners?

yes

Diar. over Liners

13 1/2"

Length of After Bearings

4'-0 3/4"

Of what Material are the After Bearings composed?

Lignum Vitae

Are Means provided for lubricating the After Bearings with Oil?

no

" " "

to prevent Sea Water entering the Stern Tubes?

no

If so, what Type is adopted?

✓

SKETCH OF CRANK SHAFT.

Handwritten sketches and notes on the right page, including diagrams of crank shafts and various measurements.

<i>Handwritten notes and diagrams.</i>	<i>Handwritten notes and diagrams.</i>	<i>Handwritten notes and diagrams.</i>	<i>Handwritten notes and diagrams.</i>
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No. of Blades each Propeller *4* Fitted or Solid? *Solid*
 Material of Blades *Cast Iron* Boss *Cast Iron*
 Diam. of Propellers *14'-0"* Pitch *13'-0"* Surface (each) *58'6"* S. ft.
 Coefficient of Displacement of Vessel at $\frac{1}{2}$ Moulded Depth *6495*

Crank Shafts Forged by *Wm Somers & Coy Ltd Heleson* Material *S.M. Steel*
 „ Pins „ *do* „ *do*
 „ Webs „ *Stewarts & Lloyds Glasgow* „ *do*
 Thrust Shafts „ *Denny Stown Forge* „ *do*
 Intermed. „ „ *do* „
 Propeller „ „ *Wm Somers & Coy Ltd Heleson* „ *Steel*
 Crank „ Finished by *The Caledon S.B. Coy Dundee*
 Thrust „ „ *do*
 Intermed. „ „ *do*
 Propeller „ „ *do*

STAMP MARKS ON SHAFTS.

465	466	467	468
B.C. Nº 3018 B.D. 29/11/18 469	B.C. Nº 5603 T.L. 29/1/19 473	B.C. Nº 5608 T.L. 7/3/19 471	B.C. Nº 5614 T.L. 3/4/19 472
B.C. Nº 5615 T.L. 29.4.19	B.C. 5620 T.L. 5-6-19		

SKETCH OF PROPELLER SHAFT.



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PUMPS, ETC.

No. of Air Pumps / *Edwards* Diar. *20 1/2"* Stroke *20"*
 Worked by Main or Independent Engines? *Main*

No. of Circulating Pumps *One* Diar. Stroke
 Type of " *Centrifugal Daysdale* *8" x 6" x 11"*
 Diar. of " Suction from Sea

Has each Pump a Bilge Suction with Non-return Valve? *Yes.* Diar. *11"*
 What other Pumps can circulate through Condenser? *Ballast & General Service*

No. of Feed Pumps on Main Engine *2* Diar. *3 1/2"* Stroke *20*

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 *Water Pair* Diar. *9 1/2" x 7* Stroke *18"*

What other Pumps can feed the Boilers? *General Service*

No. of Bilge Pumps on Main Engine *2* Diar. *3 1/2"* Stroke *20*

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

(*none* No. of Independent Bilge Pumps) (*General Service* *8" x 5" x 8"*)
 What other Pumps can draw from the Bilges? *Ballast (Lump) 8" x 9" x 8"*

Are all Bilge Suctions fitted with Roses? *Yes*

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? *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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BOILERS.

Works No. **465**
 No. of Boilers **2** Type **Scottish Return Tube**
 Single or Double-ended **Single**
 No. of Furnaces in each **3**
 Type of Furnaces **Deighton Section**
 Date when Plan approved
 Approved Working Pressure **185 lbs. \square "**
 Hydraulic Test Pressure **370 lbs. \square "**
 Date of Hydraulic Test **4-2-19.**
 „ when Safety Valves set **11-3-19**
 Pressure at which Valves were set **185 lbs**
 Date of Accumulation Test **11-3-19**
 Maximum Pressure under Accumulation Test **190**
 System of Draught **Natural**
 Can Boilers be worked separately? **Yes**
 Makers of Plates **D. Colville & Son (Shell Plates)**
John Spencer. (Wrappers Plates)
 „ Stay Bars **D. Colville & Son**
 „ Rivets **River Bolt & Nut Coy**
 „ Furnaces **Deighton Patent Tube & Tube Coy Ltd**
 Greatest Internal Diam. of Boiler **15'-9"**
 „ „ Length „ **13'-6" (Mean)**
 Square Feet of Heating Surface each Boiler **2566 $\frac{1}{2}$**
 „ „ Grate „ „ **72 $\frac{1}{2}$**
 No. of Safety Valves each Boiler **1 Pair** Diam. **3 $\frac{1}{4}$ "**
 Are the Safety Valves fitted with Easing Gear? **Yes**
 No. of Pressure Gauges, each Boiler **1** No. of Water Gauges **2**
 „ Test Cocks „ **None** „ Salinometer Cocks **1**

466 8468
2. Scottish Return Tube.
Single
3. With 2 Cyls.
Morrison Withdrawable

180 lbs. \square "
360 " "
20-12-18
18-4-19
180 lbs.
18-4-19
192 lbs.
Natural
Yes

15'-6"
12'-0"
2620 $\frac{1}{2}$
61.75
1-3 $\frac{1}{2}$



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ENDSAre the Water Gauges fitted direct to the Boiler ~~Shells~~ or mounted on Pillars?*Direct*Are the Water Gauge Pillars fitted direct to the Boiler Shells or connected by Pipes? *o/c Pillars*Are these Pipes connected to Boilers by Cocks or Valves? *✓*

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

Values

No. of Strakes of Shell Plating in each Boiler

3

Plates in each Strake

1

Thickness of Shell Plates Approved

1 1/32"

" " in Boilers

1 1/32"

Are the Rivets Iron or Steel?

Iron

Are the Longitudinal Seams Butt or Lap Joints?

Butt

Are the Butt Straps Single or Double?

Double

Are the Double Butt Straps of equal width?

Yes

Thickness of outside Butt Straps

1 1/8"

" inside "

1 1/8"

Are Longitudinal Seams Hand or Machine Riveted?

Machine

Are they Single, Double, or Treble Riveted?

Double

No. of Rivets in a Pitch

*5*Diar. of Rivet Holes *1 1/2"* Pitch*10 7/16*

No. of Rows of Rivets in Centre Circumferential Seams

✓

Are these Seams Hand or Machine Riveted?

*✓*Diar. of Rivet Holes *✓* Pitch*✓*

No. of Rows of Rivets in Front End Circumferential Seams

2

Are these Seams Hand or Machine riveted?

*Machine*Diar. of Rivet Holes *1 1/2"* Pitch*10 7/16*

No. of Rows of Rivets in Back End Circumferential Seams

2

Are these Seams Hand or Machine Riveted?

*Machine*Diar. of Rivet Holes *1 1/2"* Pitch*10 7/16*

Size of Manholes in Shell

16" x 12"

Dimensions of Compensating Rings

11" Flange + 1 1/16" Thick

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Thickness of End Plates in Steam Space Approved

$$\frac{3}{32}$$

$$\frac{3}{32}$$

$$\frac{3}{32}$$

" " " " " in Boilers

Pitch of Steam Space Stays

15 1/2" x 15 1/4"

Diar. " " " " Approved

2 3/4 Threads per Inch 6

" " " " " in Boilers

2 3/4 " 6

Material of " " "

Steel

How are Stays Secured?

Double Nuts & Washers

Diar. and Thickness of Loose Washers on End Plates

Diar 8 1/4" x 1/16 Thick

" " Riveted " " "

Loose

Width " " Doubling Strips

Local in Way of Manhole 2' 2 1/2" x 2' 0"

Thickness of Middle Back End Plates Approved

27/32

" " " " " in Boilers

27/32

Thickness of Doublings in Wide Spaces between Fireboxes

None

Pitch of Stays at

" " " " 13 3/4" x 8 1/4"

Diar. of Stays Approved

1 3/4 Threads per Inch 9

" " in Boilers

1 3/4 " 9

Material "

26-30 Lbr Steel

Are Stays fitted with Nuts outside?

Yes

Thickness of Back End Plates at Bottom Approved

27/32

" " " " " in Boilers

27/32

Pitch of Stays at Wide Spaces between Fireboxes

13 3/4 x 8 1/4"

Thickness of Doublings in

None

Thickness of Front End Plates at Bottom Approved

7/8

" " " " " in Boilers

7/8

No. of Longitudinal Stays in Spaces between Furnaces

None Fitted



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Diarr. of Stays Approved $2''$ Threads per Inch 6
 " " in Boilers 2 6
 Material *Steel*

Thickness of Front Tube Plates Approved

$\frac{7}{8}''$
 $\frac{7}{8}''$

" " " " in Boilers

Pitch of Stay Tubes at Spaces between Stacks of Tubes

$14\frac{3}{4}'' \times 10''$

Thickness of Doublings in " " "

none

" Stay Tubes at " " "

$3\frac{3}{4}'' \times \frac{3}{8}''$

Are Stay Tubes fitted with Nuts at Front End?

no

Thickness of Back Tube Plates Approved

$\frac{3}{32}$

" " " in Boilers

$\frac{3}{32}$

Pitch of Stay Tubes in Back Tube Plates

$10'' \times 10''$

" Plain "

$5'' \times 5''$

Thickness of Stay Tubes

$\frac{3}{8}$

" Plain "

$\cdot 176$ L.S.W.G.

External Diarr. of Tubes

$3\frac{3}{4}$

Material

Lap welded Iron

Thickness of Furnace Plates Approved

$\frac{11}{16}$

" " " in Boilers

$\frac{11}{16}$

Smallest outside Diarr. of Furnaces

O.D. 4'-1 $\frac{3}{8}$ Inside 4'-0"

Length between Tube Plates

$8'-0''$

Width of Combustion Chambers (Front to Back)

$3'-1\frac{1}{2}''$

Thickness of " " Tops Approved

$\frac{5}{8}$

" " " in Boilers

$\frac{5}{8}$

Pitch of Screwed Stays in C.C. Tops

$8\frac{1}{2}'' + 7\frac{3}{4}''$



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Diar. of Screwed Stays Approved

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

Threads per Inch

9

" " " in Boilers

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

9

Material " "

Steel

Thickness of Combustion Chamber Sides Approved

 $\frac{5}{8}$ "

" " " in Boilers

 $\frac{5}{8}$ "

Pitch of Screwed Stays in C.O. Sides

 $8\frac{1}{2}$ " + 8 "

Diar. " " Approved

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

Threads per Inch

9

" " " in Boilers

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

Material " "

Steel

Thickness of Combustion Chamber Backs Approved

 $\frac{5}{8}$ "

" " " in Boilers

 $\frac{5}{8}$ "

Pitch of Screwed Stays in C.O. Backs

 $7\frac{3}{4}$ " + $8\frac{1}{2}$ "

Diar. " " Approved

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

Threads per Inch

9

" " " in Boilers

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

9

Material " "

Steel

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

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

Thickness of Combustion Chamber Bottoms

No. of Girders over each Wing Chamber

5

" " " Centre "

4

Depth and Thickness of Girders

 $11\frac{1}{4}$ "

Material of Girders

Steel

No. of Stays in each

4

No. of Tubes, each Boiler

170 Plain

95 Stay

Size of Lower Manholes

 $16" \times 12"$

BOILER TEST MARKS. BOILER NOS

465	466	467	468
Nº 2741	Nº 2744	Nº 2745	2747
370 lbs	370 lbs	330 LBS.	330 lbs.
J.M.P.	T.L.	T.L.	T.L.
4/2/19	28/3/19	3/5/19	21/6/19
469	470	471	472
Nº 2749			
330 lbs.			
J.F.			
21/7/19			

For allocation of Boilers See Page 45



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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



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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

Makers

ENGINE N° 466

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

⊗ Engine 468

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

465	467
3	3
S. D. Copper	L. W. Iron
Seamless	Lap Welded
5 1/2"	5 1/2"
4 W. G.	1/4"
Brazed	Screw & Expansion
25-2-19	
370 lbs.	
TL	
466	467
3	3
S. D. Copper	L. W. Iron
Seamless	Lap Welded
5 1/2"	5 1/2"
4 W. G.	1/4"
Brazed	Screw & Expansion
26/3/19	
400 lbs.	
J.M.P.	
468	469
3	3
S. D. Copper	S. D. Copper
Seamless	Seamless
5 1/2"	5 1/2"
4 W. G.	4 W. G.
Brazed	Brazed
30/5/19	11/7/19
370 lbs.	370 lbs.
TL	TL

Leaded & 31

Finished by.
The Caledon S.B. Coy.* Made by.
465 The Broughton Copper Coy.*
467 Stewarts & Lloyds

Stewarts & Lloyds.

466 The Broughton Copper Coy. The Caledon S.B. Coy.

468 The Broughton Copper Coy. The Caledon S.B. Coy.

469

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EVAPORATORS.

No. *None* Type *None* Tons per Day *✓*
 Makers *✓*
 Working Pressure *✓* Test Pressure *✓* Date of Test *✓*
 Date of Test of Safety Valves under Steam *✓*

Ship S/S Cates 269 Weirs Evaporator

Ship S/S Calderon 271 " "

FEED WATER HEATERS.

No. *None* Type *Weirs Contact*
 Makers *J & S. Weir Glasgow*
 Working Pressure *40* Test Pressure *40* Date of Test *10/2/19*

FEED WATER FILTERS.

No. *None* Type *Jute Frames* Size *4'-0" x 2'-0"*
 Makers *The Calderon S/S & Eng Coy.*
 Working Pressure *0 Pressure* Test Pressure *Suction* Date of Test

LIST OF DONKEY PUMPS.

No.	Type	Tons per Day	Makers	Working Pressure	Test Pressure	Date of Test
1	Hand	1	Hand	1	1	1
2	Hand	1	Hand	1	1	1
3	Hand	1	Hand	1	1	1
4	Hand	1	Hand	1	1	1
5	Hand	1	Hand	1	1	1
6	Hand	1	Hand	1	1	1
7	Hand	1	Hand	1	1	1
8	Hand	1	Hand	1	1	1
9	Hand	1	Hand	1	1	1
10	Hand	1	Hand	1	1	1
11	Hand	1	Hand	1	1	1
12	Hand	1	Hand	1	1	1
13	Hand	1	Hand	1	1	1
14	Hand	1	Hand	1	1	1
15	Hand	1	Hand	1	1	1
16	Hand	1	Hand	1	1	1
17	Hand	1	Hand	1	1	1
18	Hand	1	Hand	1	1	1
19	Hand	1	Hand	1	1	1
20	Hand	1	Hand	1	1	1
21	Hand	1	Hand	1	1	1
22	Hand	1	Hand	1	1	1
23	Hand	1	Hand	1	1	1
24	Hand	1	Hand	1	1	1
25	Hand	1	Hand	1	1	1
26	Hand	1	Hand	1	1	1
27	Hand	1	Hand	1	1	1
28	Hand	1	Hand	1	1	1
29	Hand	1	Hand	1	1	1
30	Hand	1	Hand	1	1	1
31	Hand	1	Hand	1	1	1
32	Hand	1	Hand	1	1	1
33	Hand	1	Hand	1	1	1
34	Hand	1	Hand	1	1	1
35	Hand	1	Hand	1	1	1
36	Hand	1	Hand	1	1	1
37	Hand	1	Hand	1	1	1
38	Hand	1	Hand	1	1	1
39	Hand	1	Hand	1	1	1
40	Hand	1	Hand	1	1	1
41	Hand	1	Hand	1	1	1
42	Hand	1	Hand	1	1	1
43	Hand	1	Hand	1	1	1
44	Hand	1	Hand	1	1	1
45	Hand	1	Hand	1	1	1
46	Hand	1	Hand	1	1	1
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48	Hand	1	Hand	1	1	1
49	Hand	1	Hand	1	1	1
50	Hand	1	Hand	1	1	1
51	Hand	1	Hand	1	1	1
52	Hand	1	Hand	1	1	1
53	Hand	1	Hand	1	1	1
54	Hand	1	Hand	1	1	1
55	Hand	1	Hand	1	1	1
56	Hand	1	Hand	1	1	1
57	Hand	1	Hand	1	1	1
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64	Hand	1	Hand	1	1	1
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79	Hand	1	Hand	1	1	1
80	Hand	1	Hand	1	1	1
81	Hand	1	Hand	1	1	1
82	Hand	1	Hand	1	1	1
83	Hand	1	Hand	1	1	1
84	Hand	1	Hand	1	1	1
85	Hand	1	Hand	1	1	1
86	Hand	1	Hand	1	1	1
87	Hand	1	Hand	1	1	1
88	Hand	1	Hand	1	1	1
89	Hand	1	Hand	1	1	1
90	Hand	1	Hand	1	1	1
91	Hand	1	Hand	1	1	1
92	Hand	1	Hand	1	1	1
93	Hand	1	Hand	1	1	1
94	Hand	1	Hand	1	1	1
95	Hand	1	Hand	1	1	1
96	Hand	1	Hand	1	1	1
97	Hand	1	Hand	1	1	1
98	Hand	1	Hand	1	1	1
99	Hand	1	Hand	1	1	1
100	Hand	1	Hand	1	1	1



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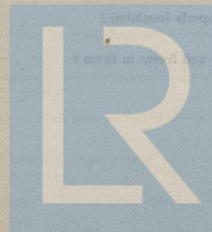
SPARE GEAR.

No. of Top End Bolts.	2	No. of Bot. End Bolts.	2	No. of Cylinder Cover Studs	6
" Coupling Bolts	1 Set (6 off)	Main Bearing Bolts	2	" Valve Chest "	6
" Junk Ring Bolts	12	" Feed Pump Valves	1 Set	" Bilge Pump Valves	1 Set
" H.P. Piston Rings	✓	" L.P. Piston Rings	✓	" L.P. Piston Rings	✓
" " Springs	✓	" " Springs	✓	" " Springs	✓
" Safety Valve "	1	" Fire Bars	75	" Feed Check Valves	1 MAIN / 1 AUX.
" Piston Rods	✓	" Connecting Rods	✓	" Valve Spindles	✓
" Air Pump Rods	✓	" Air Pump Buckets	✓	" Air Pump Valves	1 Set (HEAD)
" Cir. "	✓	" Cir. "	✓	" Cir. "	✓
" Crank Shafts	✓	" Crank Pin Bushes	✓	" Crosshead Bushes	✓
" Propeller Shafts	✓	" Propellers	✓	" Propeller Blades	✓
" Boiler Tubes	12	" Condenser Tubes	✓	" Condenser Ferrules	16

OTHER ARTICLES OF SPARE GEAR:—

2 Feed Pump Escape Valve Springs
 29 Double Fire bars. in place of 75 (wth Spay)

REFRIGERATORS



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465-6-7

ELECTRIC LIGHTING.

Installation Fitted by *Jelford Gair & Mackay, Glasgow*
 No. and Description of Dynamos *1 off 6 Pole compound. Protected.*
 Makers of Dynamos *Jelford Gair & Mackay.*
 Capacity *10 KW* Amperes, at *100* Volts, *100* Revols. per Min. *360*
 Current Alternating or Continuous *continuous*
 Single or Double Wire System *Double*
 Position of Dynamos *Engine Rm Starboard,*
 .. Main Switch Board *adjacent to Dynamo.*
 No. of Circuits to which Switches are provided on Main Switch Board *Five*
 Particulars of these Circuits:—

Circuit.	Number of Lights.	Candle Power.	Current Required. Amps.	Size of Conductor.	Current Density.	Conductivity of Conductor.	Insulation Resistance per Mile.
<i>Exms</i>	<i>36</i>	<i>16</i>	<i>18</i>	<i>7/18</i>	<i>1440</i>	<i>100%</i>	<i>600 Ω</i>
<i>accorn.</i>	<i>44</i>	<i>16</i>	<i>22</i>	<i>7/16</i>	<i>1000</i>		
<i>Engine & Boiler</i>	<i>24</i>	<i>16</i>	<i>12</i>	<i>7/18</i>	<i>960</i>		
<i>Navigation</i>	<i>16</i>	<i>16</i>	<i>8</i>	<i>7/30</i>	<i>1142</i>		
<i>Winches</i>	<i>-</i>	<i>-</i>	<i>15</i>	<i>7/16</i>	<i>682</i>		

Total No. of Lights *120* No. of Motors driving Pans, &c. *None* No. of Heaters

Current required for Motors and Heaters *None*

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

Are Out-outs fitted as follows?—							
On Main Switch Board, to Cables of Main Circuits	yes						
On Aux. " each Auxiliary Circuit	none						
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?	Standard						
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. 1/17 S.W.G., Largest, No. 1/14 S.W.G.							
How are Conductors in Engine and Boiler Spaces protected?	Armoured & Braided						
" Saloons, State Rooms, &c., " ?	Lead covered						
What special protection is provided in the following cases?—							
(1) Conductors exposed to Heat or Damp	Armoured & Braided						
(2) " passing through Bunkers or Cargo Spaces	Do Do						
(3) " " Deck Beams or Bulkheads	Glands						

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? *none*

Are all Hull Connections for Single-Wire Systems made with Screws of large Surface? *none*

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? *20,000* Ohms.

Is the Installation supplied with a Voltmeter? *yes*

"War Spies" an Ampere Meter? *yes*

Date of Trial of complete Installation *15 March 1919.* Duration of Trial *6 hours*

*Jno. E. Allaw
Surveyor*

note
no Wireless installation was fitted at completion, cable only supplied.

"War Spies" Date of trial of complete installation *29/4/19*
"War Spies" " " " " *27/5/19*



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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.

*266 Smaller Boilers supplied from
268 Harland & Wolff for Particulars See
Page 44.*

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. *War. Leven*

as ascertained by *me* from personal examination

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

Fees—

MAIN BOILERS.

H.S. *5132* Sq. ft.

G.S. *72*

DONKEY BOILERS.

H.S. *✓*

G.S. *✓*

ENGINES.

L.P.O. *55.6* Cub. ft.

Testing, &c. ...

Expenses ...

Total ...

£ s. d.

8 : 8 : 4

25 : 5 : 0

25 : 5 : 0

25 : 5 : 0

25 : 5 : 0

25 : 5 : 0

25 : 5 : 0

25 : 5 : 0

25 : 5 : 0

25 : 5 : 0

25 : 5 : 0

25 : 5 : 0

It is submitted that this Report be approved,

Thos. King
Chief Surveyor.

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

1919.

14th May

Fees advised

Fees paid



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Secret

Boiler Test Marks. for War Spray & War Weapons



№ 537

LLYD'S TEST.

360 LBS.

R.J.B 20/12/18

Boiler's by Harold & Wolff.

Belfast. Haydon Survey

Diam 15'-6" Length 12'-0"

S.S. 61.75 H.S. 2620 Pressure 180

Turnaces 3 - 3'-9" inside diam (Morris Suspension bridge)

Sheet 1 3/8 Thick (Ship No. 468 Gate Surface 67.5 ft)

Enigues 17th 575 by Dunsmuir & Jackson. Loven.

						VISITS.		
NAME OF SHIP	YARD NO	ENG. NO	B.L.R. NO	DRAIN. TRIAL	SEA TRIAL	HANDED OVER	1 st LAST	2 ^d LAST
WAR LEVEN.	265	465	465	14-3-19	25-3-19	26/3/19	10/6/8	17/3/19 57
WAR SPEY	266	466 *	*	18-4-19	22-4-19	29-4-19	10/6/8	29/4/19 63
WAY GARRY.	267	467	466	16-5-19	21/5/19	27/5/19	10/4/8	23/5/19 65
WAY WENSUM	268	468 *	*	18/6/19	29/5/19	7/7/19	19/6/8	17/7/19 69
WAY WAVENEY	269	469	467	18/7/19	22/7/19	24/7/19	10/6/8	24/7/19 72
WAY WEY.	270	473	469					
Caldron	271	* 575	468	18/9/19	25/9/19	27/9/19	10/6/8	25/9/19 75
Way								

War Spy now named Lady Patricia
War Larry " " Lady Emerald
War Wensum " " Dundee
War Waverly " " Cortes
Calderon

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