

No. 2229

10/232

THE BRITISH CORPORATION FOR THE SURVEY  
AND

REGISTRY OF SHIPPING.

Report No. 2241 No. in Register Book 3655

S.S. "COBARGO" No 412

Makers of Engines THE AILSA SHIPBUILDING CO. LTD.

Works No. 145

Makers of Main Boilers D. ROWAN & CO. LTD.

Works No. B.368.

Makers of Donkey Boiler

Works No. © 2020

MACHINERY.

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002883-002890-0102



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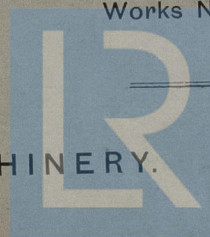
Makers of Main Boilers D. ROWAN & CO. LTD.

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MACHINERY.



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

Received at Head Office 31<sup>st</sup> May 1929.

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

— "COBARGO" —

Official No.

Port of Registry

Registered Owners THE ILLAWARRA & SOUTH COAST STEAM

NAVIGATION & CO. LTD.

SYDNEY, N.S.W.

Engines Built by THE AILSA SHIPBUILDING & CO. LTD.

at TROON.

Main Boilers Built by D. ROWAN & CO. LTD.

at GLASGOW.

Donkey " "

at

Date of Completion

30/5/29

First Visit 16-10-28

Last Visit

30/5/29

Total Visits

25

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## RECIPROCATING ENGINES.

Works No. 145 No. of Sets 2 Description

TRIPLE EXPANSION, SURFACE CONDENSING, RECIPROCATING.  
TWIN SCREW

No. of Cylinders each Engine 3 No. of Cranks 3  
 Diars of Cylinders  $12\frac{1}{2}$ " 20" 32" Stroke 24"  
 Cubic feet in each L.P. Cylinder 111  
 Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cyl.? YES  
 " " " each Receiver? TOP ONLY  
 Type of H.P. Valves, PISTON  
 1st I.P. " ANDREWS & CAMERON  
 2nd I.P., V  
 L.P. " DOUBLE PORTED SLIDE  
 " Valve Gear STEPHENSON'S LINK MOTION  
 " Condenser BUILT Cooling Surface 580 sq. ft. each  
 Diameter of Piston Rods (plain part)  $3\frac{1}{2}$ " Screwed part (bottom of thread)  $2\frac{3}{4}$ "  
 Material " MILD STEEL  
 Diam. of Connecting Rods (smallest part)  $3\frac{3}{8}$ " Material STEEL  
 " Crosshead Gudgeons  $3\frac{1}{2}$ " Length of Bearing  $3\frac{1}{2}$ " Material STEEL  
 No. of Crosshead Bolts (each) 4 Diam. over Thrd.  $1\frac{1}{2}$ " Thrds. per inch 6 Material STEEL  
 " Crank Pin " " 2 " 2" " 4 $\frac{1}{2}$ " " "  
 " Main Bearings 6 Lengths  $6\frac{3}{4}$ "  
 " Bolts in each 2 Diam. over Thread  $1\frac{3}{4}$ " Threads per inch 5 Material STEEL  
 " Holding Down Bolts, each Engine 49 Diam. 1" No. of Metal Chocks 49.  
 Are the Engines bolted to the Tank Top or to a Built Seat? BUILT SEAT  
 Are the Bolts tapped through the Tank Top and fitted with Nuts Inside?  
 If not, how are they fitted?

Connecting Rods, Forged by THE LANGLEY FORGE CO. LTD.  
 Piston " " D. COLVILLE & SONS, LTD.  
 Crossheads, " THE LANGLEY FORGE CO. LTD.  
 Connecting Rods, Finished by THE AILSA SHIPBUILDING CO. LTD.  
 Piston " " DITTO  
 Crossheads, " Do.  
 Date of Harbour Trial 24/5/29.  
 " Trial Trip 30/5/29.  
 Trials run at Troon to Skelmorlie mile & back.  
 Were the Engines tested to full power under Sea-going conditions? YES.  
 If so, what was the I.H.P.? 1000  
 Pressure in ~~Receiver~~ Receiver, 178 lbs., ~~2nd~~ I.P., 69 lbs., L.P., 12 $\frac{1}{2}$  lbs., Vacuum, 25 ins.  
 Speed on Trial 11.309 Knots.  
 If the Conditions on Trial were such that full power records were not obtained give the following estimated data:—  
 Builders' estimated I.H.P. 870 (TOTAL) Revols. per min. 117  
 Estimated Speed 11 KNOTS.



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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 Pinion

" 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

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 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

3

Angle of Cranks

120°

Diar. by Rule

6.53"

Actual

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

In Way of Webs

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

" of Crank Pins

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

Length between Webs

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

Greatest Width of Crank Webs

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

Thickness

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

Least

" "

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

"

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

Diar. of Keys in Crank Webs

1  $\frac{1}{2}$ " x  $\frac{3}{4}$ "

Length

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

" Dowels in Crank Pins

NONE

Length

✓

Screwed or Plain

✓

No. of Bolts each Coupling

6

Diar. at Mid Length

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

Diar. of Pitch Circle

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

Greatest Distance from Edge of Main Bearing to Crank Web

CLEARANCE

Type of Thrust Blocks

MICHELL

No.

"

Rings

✓

Diar. of Thrust Shafts at bottom of Collars

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

No. of Collars

ONE

" " Forward Coupling

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

At Aft Coupling

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

Diar. of Intermediate Shafting by Rule

6.219"

Actual

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

No. of Lengths 3 P. 3 S. =

No. of Bolts, each Coupling

6

Diar. at Mid Length

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

Diar. of Pitch Circle

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

Diar. of Propeller Shafts by Rule

6.927"

Actual

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

At Couplings

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

Are Propeller Shafts fitted with Continuous Brass Liners?

YES

Diar. over Liners

8  $\frac{1}{2}$ "8  $\frac{3}{8}$ ", 9"

Length of After Bearings

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

Of what Material are the After Bearings composed?

LIGNUMVITAE

Are Means provided for lubricating the After Bearings with Oil?

"GYLER" TYPE, TO BE

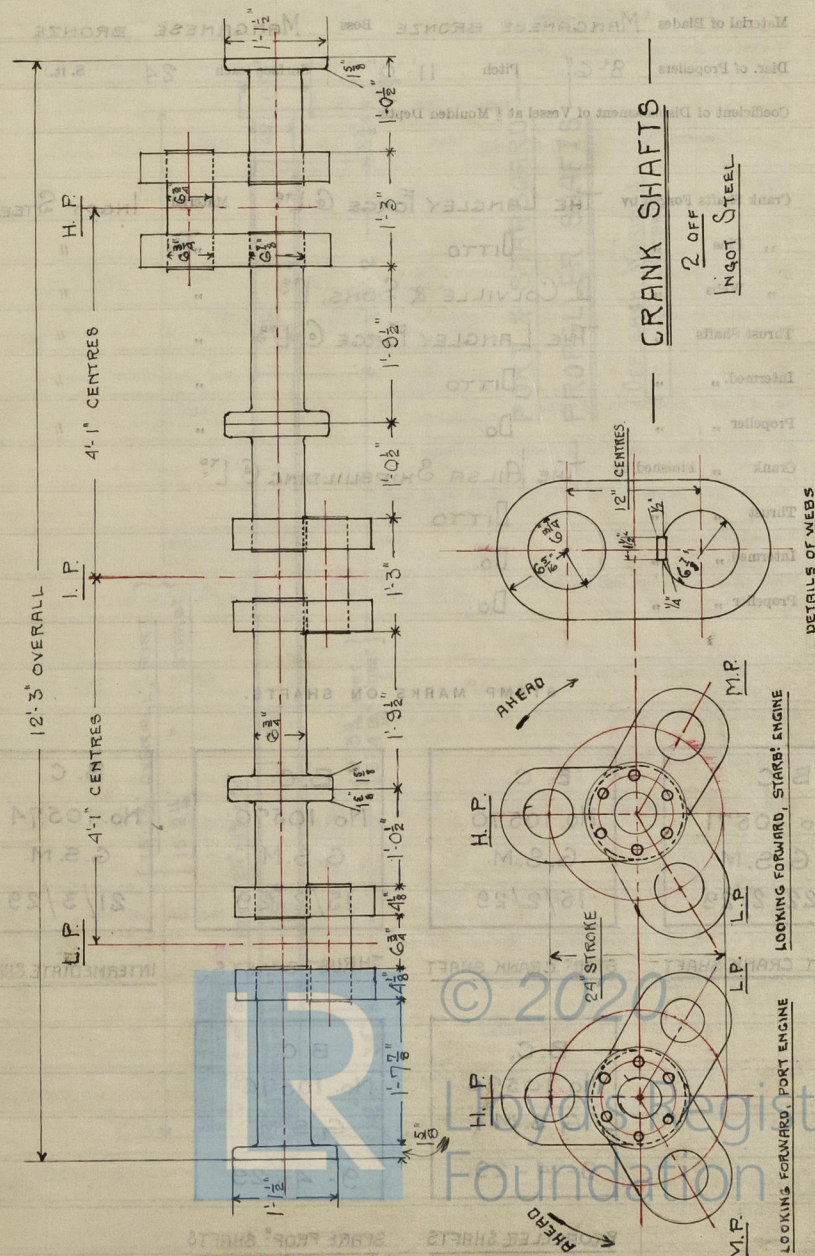
" " to prevent Sea Water entering the Stern Tubes?

FITTED AFTER ARRIVAL

If so, what Type is adopted?

IN AUSTRALIA.

## SKETCH OF CRANK SHAFT.





No. of Blades each Propeller 4 ~~Pitted or Solid?~~ SOLID  
 Material of Blades MANGANESE BRONZE Boss MANGANESE BRONZE  
 Diam. of Propellers 8' 6" Pitch 11' 0" Surface (each 24 S. ft.)  
 Coefficient of Displacement of Vessel at  $\frac{1}{2}$  Moulded Depth

Crank Shafts Forged by THE LANGLEY FORGE & CO. LTD. Material INGOT STEEL  
 " Pins " DITTO. " "  
 " Webs " D. COLVILLE & SONS, LTD. " "  
 Thrust Shafts " THE LANGLEY FORGE & CO. LTD. " "  
 Intermed. " " DITTO. " "  
 Propeller " " Do. " "  
 Crank " Finished by THE AILSA SHIPBUILDING CO. LTD.  
 Thrust " " DITTO  
 Intermed. " " Do.  
 Propeller " " Do.

## STAMP MARKS ON SHAFTS.

B. C.  
 No. 10571  
 G. S. M.  
 22/2/29

PORT CRANK SHAFT

B. C.  
 No. 10570  
 G. S. M.  
 15/2/29

STAR<sup>d</sup> CRANK SHAFT

B. C.  
 No. 10570  
 G. S. M.  
 15/2/29

THRUST SHAFTS

B. C.  
 No. 10574  
 G. S. M.  
 21/3/29

INTERMEDIATE SHAFTS

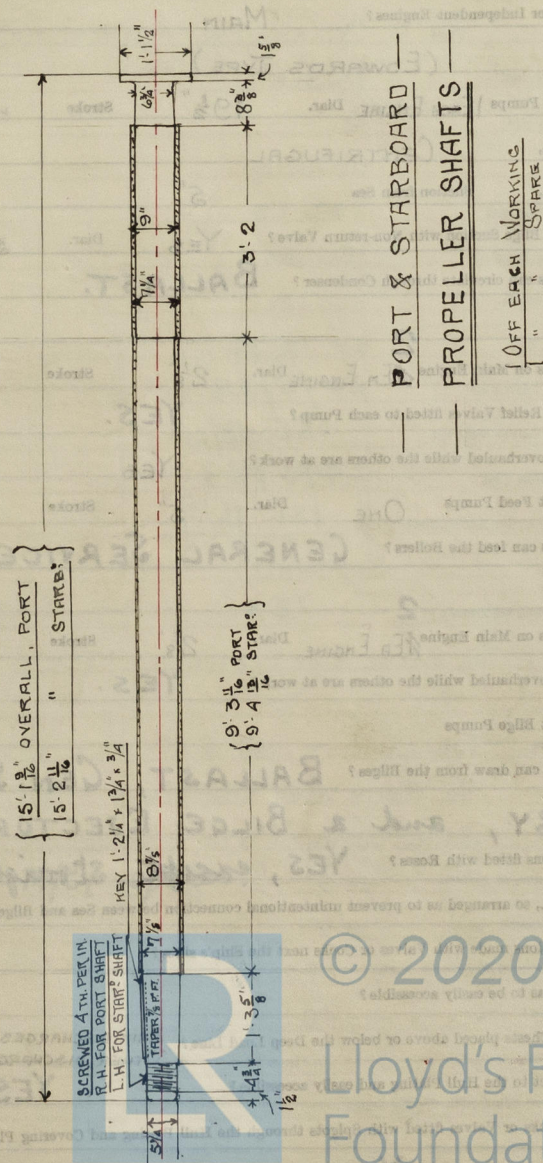
B. C.  
 No. 10576  
 G. S. M.  
 9-4-29

PROPELLER SHAFTS

B. C.  
 No. 10576  
 G. S. M.  
 9-4-29

SPARE PROP<sup>d</sup> SHAFTS

## SKETCH OF PROPELLER SHAFT.





## PUMPS, ETC.

No. of Air Pumps 1 EACH ENGINE Diar. 12" Stroke 12"

Worked by Main or Independent Engines? MAIN

(EDWARDS TYPE)

No. of Circulating Pumps 1 EACH ENGINE Diar. 19½" Stroke ✓

Type of " CENTRIFUGAL

Diar. of " Suction from Sea 5"

Has each Pump a Bilge Suction with Non-return Valve? YES Diar. 3½"

What other Pumps can circulate through Condenser? BALLAST.

No. of Feed Pumps on Main Engine 2 SEA. ENGINE Diar. 2½" Stroke 12"

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 ONE Diar. 5" Stroke 12"

What other Pumps can feed the Boilers? GENERAL SERVICE.

No. of Bilge Pumps on Main Engine 2 SEA. ENGINE Diar. 2½" Stroke 12"

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, GEN. SERVICE, SANITARY, and a BILGE EJECTOR.

Are all Bilge Suctions fitted with Roses? YES, except straight tail

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? "

Are they placed so as to be easily accessible? "

Are the Discharge Chests placed above or below the Deep Load Line? MAIN DISCHARGES BELOW, OTHER DISCHARGES ABOVE.

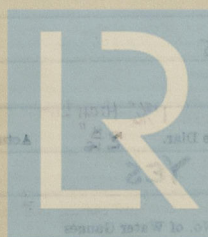
Are they fitted direct to the Hull Plating and easily accessible? YES.

Are all Blow-off Cocks or Valves fitted with Spigots through the Hull Plating and Covering Plates or Flanges

on the Outside?

YES.

lifes in M/CY spaces.



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## BOILERS.

Works No. B. 368

No. of Boilers 2 Type CYLINDRICAL, MULTITUBULAR

Single or Double-ended SINGLE

No. of Furnaces in each 2

Type of Furnaces DEIGHTON

Date when Plan approved 28-9-28

Approved Working Pressure 180 LBS.

Hydraulic Test Pressure 320 LBS.

Date of Hydraulic Test 28-12-28

" when Safety Valves set 24/5/29

Pressure at which Valves were set 185 lb/o"

Date of Accumulation Test 24/5/29

Maximum Pressure under Accumulation Test 185 lb/o"

System of Draught NATURAL

Can Boilers be worked separately? YES.

Makers of Plates THE STEEL CO. OF SCOTLAND, LT<sup>d</sup>

" Stay Bars THE CONSETT IRON CO. LT<sup>d</sup> ✓

" Rivets THE NORTH WEST RIVET, BOLT & NUT FACTORY

" Furnaces JOHN MARSHALL & CO. (MOTHERWELL) LT<sup>d</sup> @

Greatest Internal Diam. of Boilers 11'0"

" " Length " 13'9"

Square Feet of Heating Surface each Boiler 1755

" " Grate " " 48

No. of Safety Valves each Boiler 2

Are the Safety Valves fitted with Easing Gear? YES

No. of Pressure Gauges, each Boiler One No. of Water Gauges ONE

" Test Cocks " 3 " Salinometer Cocks One.

## STAMP MARK ON BOILERS.

## B. C. TEST

No. 5133

T.P. 320 Lbs.

W.P. 180 Lbs.

G. M. L.

28-12-28



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

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

Are these Pipes connected to Boilers by Cocks or Valves? **COCKS**

Are Blow-off Cocks or Valves fitted on Boiler Shells? **VALVES on back ends.**

No. of Strakes of Shell Plating in each Boiler **ONE**

„ Plates in each Strake **2**

Thickness of Shell Plates Approved  **$1\frac{3}{32}$  "**

„ „ in Boilers **"**

Are the Rivets Iron or Steel? **STEEL**

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  **$\frac{27}{32}$  "**

„ inside „  **$\frac{31}{32}$  "**

Are Longitudinal Seams Hand or Machine Riveted? **MACHINE.**

Are they Single, Double, or Treble Riveted? **TREBLE**

No. of Rivets in a Pitch **5**

Diar. of Rivet Holes  **$1\frac{3}{16}$  "** Pitch **8"**

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? **HAND.**

Diar. of Rivet Holes  **$\frac{3}{16}$  "** Pitch  **$3\frac{1}{2}$  "**

No. of Rows of Rivets in Back End Circumferential Seams **2**

Are these Seams Hand or Machine Riveted? **MACHINE.**

Diar. of Rivet Holes  **$\frac{3}{16}$  "** Pitch  **$3\frac{1}{2}$  "**

Size of Manholes in Shell  **$17\frac{1}{2} \times 13$  "**

Dimensions of Compensating Rings  **$2\frac{1}{11} \times 2\frac{1}{7} \times 1\frac{3}{32}$  "**



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Thickness of End Plates in Steam Space Approved

" " " " " in Boilers

Pitch of Steam Space Stays

Diar. " " " " Approved  $2\frac{3}{4}$ " &  $2\frac{1}{2}$ " Threads per Inch

" " " " " in Boilers  $2\frac{3}{4}$ " &  $2\frac{1}{2}$ " "

Material of " " "

How are Stays Secured?

Diar. and Thickness of Loose Washers on End Plates

" " Riveted " "

Width " " Doubling Strips "

Thickness of Middle Back End Plates Approved

" " " " " in Boilers

Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at " " " "

Diar. of Stays Approved  $1\frac{7}{8}$ "  $2\frac{1}{8}$ " Threads per Inch

" " in Boilers  $1\frac{7}{8}$ "  $2\frac{1}{8}$ " "

Material "

Are Stays fitted with Nuts outside?

Thickness of Back End Plates at Bottom Approved

" " " " " in Boilers

Pitch of Stays at Wide Spaces between Fireboxes

Thickness of Doublings in " "

Thickness of Front End Plates at Bottom Approved

" " " " " in Boilers

No. of Longitudinal Stays in Spaces between Furnaces

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

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

19" & 21"

6

6

STEEL

DOUBLE NUTS

✓

✓

✓

$\frac{3}{4}$ "

$\frac{3}{4}$ "

✓

9

9

STEEL

YES

$\frac{3}{4}$ "

$\frac{3}{4}$ "

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

✓

$\frac{27}{32}$ "

$\frac{27}{32}$ "

3



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|   |       |                  |   |
|---|-------|------------------|---|
| Diam. of Stays Approved                               | 2"    | Threads per Inch | 6   |
| " " in Boilers  | 2"    |                  | 6   |
| Material "  |       |                  | STEEL   |
| Thickness of Front Tube Plates Approved               |       |                  | $\frac{27}{32}$ "                                   |
| " " " " in Boilers                                    |       |                  | $\frac{27}{32}$ "                                   |
| Pitch of Stay Tubes at Spaces between Stacks of Tubes |       |                  | $8\frac{3}{4}$ "                                    |
| Thickness of Doublings in                             | " " " |                  | ✓   |
| " Stay Tubes at                                       | " " " |                  | $\frac{5}{16}$ "                                    |
| Are Stay Tubes fitted with Nuts at Front End?         |       |                  | 10 ONLY   |
| Thickness of Back Tube Plates Approved                |       |                  | $\frac{23}{32}$ "                                   |
| " " " in Boilers                                      |       |                  | $\frac{23}{32}$ "                                   |
| Pitch of Stay Tubes in Back Tube Plates               |       |                  | 9" & $13\frac{1}{2}$ "                              |
| " Plain "   |       |                  | $4\frac{1}{2}$ "                                    |
| Thickness of Stay Tubes                               |       |                  | $\frac{1}{4}$ ", $\frac{5}{16}$ " & $\frac{3}{8}$ " |
| " Plain "   |       |                  | 8 W.G.  |
| External Diam. of Tubes                               |       |                  | $3\frac{1}{4}$ "                                    |
| Material "  |       |                  | IRON  |
| Thickness of Furnace Plates Approved                  |       |                  | $\frac{39}{64}$ "                                   |
| " " " in Boilers                                      |       |                  | $\frac{39}{64}$ "                                   |
| Smallest outside Diam. of Furnaces                    |       |                  | $4'-1\frac{3}{4}"$                                  |
| Length between Tube Plates                            |       |                  | $7'-2"$   |
| Width of Combustion Chambers (Front to Back)          |       |                  | $2'-11\frac{5}{8}"$ MEAN                            |
| Thickness of " " Tops Approved                        |       |                  | $\frac{5}{8}$ "                                     |
| " " " " in Boilers                                    |       |                  | $\frac{5}{8}$ "                                     |
| Pitch of Screwed Stays in C.C. Tops                   |       |                  | $8\frac{1}{4}"$                                     |

|   |       |                  |   |
|---|-------|------------------|---|
| Diam. of Stay Tubes Approved                          | 2"    | Threads per Inch | 6   |
| " " in Boilers  | 2"    |                  | 6   |
| Material "  |       |                  | STEEL   |
| Thickness of Front Tube Plates Approved               |       |                  | $\frac{27}{32}$ "                                   |
| " " " " in Boilers                                    |       |                  | $\frac{27}{32}$ "                                   |
| Pitch of Stay Tubes at Spaces between Stacks of Tubes |       |                  | $8\frac{3}{4}$ "                                    |
| Thickness of Doublings in                             | " " " |                  | ✓   |
| " Stay Tubes at                                       | " " " |                  | $\frac{5}{16}$ "                                    |
| Are Stay Tubes fitted with Nuts at Front End?         |       |                  | 10 ONLY   |
| Thickness of Back Tube Plates Approved                |       |                  | $\frac{23}{32}$ "                                   |
| " " " in Boilers                                      |       |                  | $\frac{23}{32}$ "                                   |
| Pitch of Stay Tubes in Back Tube Plates               |       |                  | 9" & $13\frac{1}{2}$ "                              |
| " Plain "   |       |                  | $4\frac{1}{2}$ "                                    |
| Thickness of Stay Tubes                               |       |                  | $\frac{1}{4}$ ", $\frac{5}{16}$ " & $\frac{3}{8}$ " |
| " Plain "   |       |                  | 8 W.G.  |
| External Diam. of Tubes                               |       |                  | $3\frac{1}{4}$ "                                    |
| Material "  |       |                  | IRON  |
| Thickness of Furnace Plates Approved                  |       |                  | $\frac{39}{64}$ "                                   |
| " " " in Boilers                                      |       |                  | $\frac{39}{64}$ "                                   |
| Smallest outside Diam. of Furnaces                    |       |                  | $4'-1\frac{3}{4}"$                                  |
| Length between Tube Plates                            |       |                  | $7'-2"$   |
| Width of Combustion Chambers (Front to Back)          |       |                  | $2'-11\frac{5}{8}"$ MEAN                            |
| Thickness of " " Tops Approved                        |       |                  | $\frac{5}{8}$ "                                     |
| " " " " in Boilers                                    |       |                  | $\frac{5}{8}$ "                                     |
| Pitch of Screwed Stays in C.C. Tops                   |       |                  | $8\frac{1}{4}"$                                     |



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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

" " " " in Boilers  $\frac{5}{8}$ "

Pitch of Screwed Stays in C.O. Sides

Diar. " " Approved  $1\frac{5}{8}$ " Threads per Inch 9

" " " in Boilers  $1\frac{5}{8}$ " 9

Material " " STEEL

Thickness of Combustion Chamber Backs Approved

" " " " in Boilers  $\frac{21}{32}$ "

Pitch of Screwed Stays in C.O. Backs

Diar. " " Approved  $1\frac{3}{4}$ "  $1\frac{7}{8}$ " 2" Threads per Inch 9

" " " in Boilers  $1\frac{3}{4}$ "  $1\frac{7}{8}$ " 2" 9

Material " " STEEL

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

ALL EXCEPT NUTS AT BOTTOM END

Thickness of Combustion Chamber Bottoms

$\frac{3}{4}$ "

No. of Girders over each Wing Chamber

5

" " " Centre "

✓

Depth and Thickness of Girders

$8\frac{3}{8}$ "  $\times$   $\frac{7}{8}$ " PLATES

Material of Girders

STEEL

No. of Stays in each

3

No. of Tubes, each Boiler

168 PLAIN, 68 STAY, 238 TOTAL

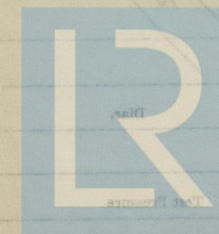
Size of Lower Manholes

17"  $\times$  13"

# 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  
 Description of Seams in Boiler Crowns  
 Pitch  
 Diam. of Rivet Holes  
 Height of Firebox Crown above Fire Grate  
 Are Firebox Crowns Flat or Dished?  
 Internal Radius of Dished Crowns  
 Thickness of Plates  
 Diam.  
 No. of Crown Stays  
 External Diam. of Firebox at Top  
 Thickness of Plates  
 No. of Water Tubes  
 Material of Water Tubes  
 Size of Manhole in Shell  
 Dimensions of Compensating Ring  
 Heating Surface, each Boiler  
 Grate Surface

## SUPERHEATERS



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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 |

## MAIN STEAM PIPES.



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## MAIN STEAM PIPES.

No. of Lengths

3

Material

Steel.

Brazed, Welded or Seamless

Seamless.

Internal Diam.

3 7/8"

Thickness

5/16"

How are Flanges secured?

Screwed + expanded.

Date of Hydraulic Test

17/5/29

Test Pressure

540 lb/□" (Ralph Steel.)

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

LIST OF PORTABLE PUMPS  
EVAPORATORS

Made by Stewarts &amp; Lloyd Ltd.



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## EVAPORATORS.

No. 1 Type CAST IRON No. 90349 Tons per Day 10  
 Makers G. & J. WEIR, L<sup>td</sup>  
 Safety Valve set to 25 LBS. Test Pressure Shell.....50 Lbs  
 Working Pressure Tubes...400 Lbs Date of Test 28-1-29  
 Date of Test of Safety Valves under Steam 29/5/29.

## FEED WATER HEATERS.

No. 1 Type "DIRECT CONTACT" No. 90347 17"  
 Makers G. & J. WEIR, L<sup>td</sup>  
 Escape Set to 20 LBS. Test Pressure 40 LBS. Date of Test 26-2-29.  
 Working Pressure

## FEED WATER FILTERS.

No. ONE Type PRESSURE GRAVITATION Size  
 Makers JOHN KIRKALDY, L<sup>td</sup> No. 862  
 Working Pressure 180 LBS. Test Pressure 450 LBS. Date of Test 7/5/29.

## LIST OF DONKEY PUMPS.

MAIN FEED PUMP 10FF. G. & J. WEIR, L<sup>td</sup> No. 90348 7" x 5" x 12"  
 SUCTIONS:-  
 DISCHARGES:-  
 GENERAL SERVICE P/P 10FF. THOM, LAMONT & CO. L<sup>td</sup> No. 14692 7" x 4½" x 8"  
 SUCTIONS:-  
 DISCHARGES:-  
 BALLAST PUMP 10FF THOM, LAMONT & CO. L<sup>td</sup> No. 14691 7" x 7½" x 8"  
 SUCTIONS:-  
 DISCHARGES:-  
 FRESH WATER P/P 10FF. THOM, LAMONT & CO. L<sup>td</sup> No. 14694 3¼" x 3" x 4"  
 SUCTIONS:-  
 DISCHARGES:-  
 SANITARY PUMP 10FF. THOM, LAMONT & CO. L<sup>td</sup> No. 14693 5" x 5" x 6"  
 SUCTIONS:-  
 DISCHARGES:-  
 CIRCULATING P/P 20FF. MATTHEW PAUL & CO. L<sup>td</sup> Nos. 8333/4 19½" SUCTION.  
 SUCTIONS:-  
 DISCHARGE



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## REFRIGERATORS.

No. of Machines *One* Capacity of each  
 Makers *HASLAM & NEWTON, LTD, DERBY.*  
 Description *5" x 5" compressor (single-acting)  
 coupled direct to steam engine.*

No. of Steam Cylinders, each Machine *One.* No. of Compressors *One.* No. of Cranks *One.*

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

or Independently *Ballast, both main engine  
 Sanitary, independent Sanitary, and  
 General Service pumps can all be  
 used to circulate condenser cooling  
 water. (5) None worked by refrig.  
 m/c.*

System of Refrigeration *Ammonia, direct expansion.*  
 Insulation *Granulated cork.*

Are ~~Refrigerating~~ Regulating Valves placed so as to be accessible without entering the Insulated

Spaces? *YES.*

Are all Pipes, Air Trunks, &c., well secured and protected from risk of damage? *YES.*

Are all Bilge, Sounding, and Air Pipes in Insulated Spaces properly insulated? *(none.)*

Are Thermometer Tubes so arranged that Water cannot enter and freeze in them? *YES.*

Date of Test under Working Conditions *28<sup>th</sup>, 29<sup>th</sup> and 30<sup>th</sup> May, 1929.*  
*28/5/29. System air-tested at 250 lb/sq" +  
 leaks made good.*

*29/5/29. M/c started 6-15 p.m. on butter-room.*

*30/5/29 M/c stopped 1-15 a.m. Temp. noted.*

*gas thermometer also etc.*

## RESULTS OF TRIALS.

| COMPARTMENT.  | Temp. at beginning of Trial. | Temp. at end of Trial. | Time required to obtain this Result. | Rise of Temp. after 12 hours. |
|---|------------------------------|------------------------|--------------------------------------|-------------------------------|
| <i>Butter room.</i>   | <i>55° F.</i>                | <i>8° F.</i>           | <i>7 hours.</i>                      | <i>26° F.</i>                 |
| <i>Meat room.</i>   | <i>60° F.</i>                | <i>14° F.</i>          | <i>2½ hours.</i>                     | <i>—</i>                      |
| <i>(owing to delay in completing insulation of meat-room pipes, there was insufficient time to test rise of temperature. Both rooms were opened as soon as specified 15° F. had been reached in meat-room; and the atmosphere found to be sweet &amp; clear.)</i> |                              |                        |                                      |                               |
| <i>* not aboard when spare gear checked; but asked for by Surveyor (see correspondence).</i>  |                              |                        |                                      |                               |

Articles of Spare Gear for Refrigerating Plant carried on board:— *One crank shaft,  
 \* one piston & rod for engine, \* do. for compressor, \* one  
 slide valve spindle, one pr. main bearing bushes,  
 2 bolts for same, one set piston & connecting rod  
 bushes with bolts, one ecc. \* rod & strap, one set of  
 metallic packing rings for compressor, one set comp.  
 suction & delivery valves, complete.*



## ELECTRIC LIGHTING.

Installation Fitted by **TELFORD, GRIER & MCKAY, L<sup>td</sup>**  
 No. and Description of Dynamos **One** **KW. Compound-wound.**  
 Makers of Dynamos **W. Sisson & Co. L<sup>td</sup>**  
 Capacity " **54/5** Amperes, at **115** Volts, **550** Revols. per Min. **6 K/W.**  
 Current Alternating or Continuous **Continuous.**  
 Single or Double Wire System **Double.**  
 Position of Dynamos **Starboard side of engine room.**  
 " Main Switch Board " " " " " "  
 No. of Circuits to which Switches are provided on Main Switch Board **6**

## 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. |
|-------------|-------------------|---------------|-------------------------|--------------------|------------------|----------------------------|---------------------------------|
| Navigation  | 11                | Various.      | 5                       | 7/029              | 1111             | 100%                       | 600 meg.                        |
| Forward     | 27                | "             | 9                       | 7/036              | 1286             | "                          | "                               |
| Bridge      | 21                | "             | 10                      | "                  | 1429             | "                          | "                               |
| Midship     | 16                | "             | 8                       | 7/029              | 1778             | "                          | "                               |
| Aft         | 17                | 30 watts.     | 5                       | "                  | 1111             | "                          | "                               |
| Engine Room | 24                | " "           | 7                       | "                  | 1556             | "                          | "                               |

Total No. of Lights **116** No. of Motors driving Fans, &c. — No. of Heaters —

Current required for Motors and Heaters —



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

| Location of<br>Dynamo | Capacity | Current<br>Rating<br>Amps. | Number<br>of<br>Circuits | Location<br>of<br>Circuit | Insulation<br>Resistance<br>per Mile | Conductivity<br>Coefficient | Current<br>Rating<br>Amps. | Size<br>of<br>Conductor | Number<br>of<br>Circuits | Location<br>of<br>Circuit |
|-----------------------|----------|----------------------------|--------------------------|---------------------------|--------------------------------------|-----------------------------|----------------------------|-------------------------|--------------------------|---------------------------|
|-----------------------|----------|----------------------------|--------------------------|---------------------------|--------------------------------------|-----------------------------|----------------------------|-------------------------|--------------------------|---------------------------|

Are Cut-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

On Aux. " " each Auxiliary Circuit

Wherever a Cable is reduced in size

To each Lamp Circuit

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

Are the Fuses of Standard Sizes?

Are all Switches and Cut-outs constructed of Non-Inflammable Material?

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

Smallest Single Wire used, No. 064 S.W.G., Largest, No. 064 S.W.G.

How are Conductors in Engine and Boiler Spaces protected? L.C. + A.

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

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp

(2) " " passing through Bunkers or Cargo Spaces

(3) " " Deck Beams or Bulkheads

A.

A.

Reamed holes for A.  
W.T. glands in main

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?

"

Has the Insulation Resistance over the whole system been tested?

"

What does the Resistance amount to?

.3 Meg Ohms.

Is the Installation supplied with a Voltmeter?

YES.

" " " an Ampere Meter

"

Date of Trial of complete Installation 30/5/29 Duration of Trial 6 hours.

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

YES.

Dynamo governor test;—

Main switch — out, 110-132-126 volts.  
in, 126-108-110 "

Load, 33 amps.

(This performance was improved on 31/5/29.)

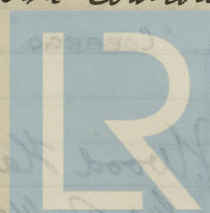
Insulation resistances;—

Armature field, 100 Meg. Eng. Room Port, 50 M.

Forward, 10 M. Navigation, 600,000 ohms.

Bridge, 3 M. Midship, 20 M. Aft, 100 M.

Motor, with Controller, fitted to Cables in engine room.



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cables. Bushed holes for L.C.  
B'heads.



## 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 Engine 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.

"COBARGO."

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

J. Wood Harrington.  
 Geo. S. Macfarlane.  
 Engineer Surveyors 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.O.           | Cub. ft. | : | : | : |
|                  |          | £ | : | : |
| Testing, &c. ... |          | : | : | : |
|                  |          | £ | : | : |
| Expenses ...     |          | : | : | : |
| Total ...        | £        | : | : | : |

It is submitted that this Report be approved,

Whiter King  
 Chief Surveyor.

Approved by the Committee for the Class of M.B.S.\* on the 21<sup>st</sup> August 1929

Fees advised

Fees paid



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 Ash Secretary.



## GENERAL CONSTRUCTION

Have the Machinery and Boilers been constructed in accordance with the requirements of the Act and the Rules made thereunder?

M.R. BOLTON

Approved Plans?

Sd. R.

H.S.

If not, give reasons why the same have not been approved, and state what alterations are required.

G.S.

DOCKET BOLTERS

Sd. R.

H.S.

G.S.

ENGINEER

Opp. R.

L.P.O.

Testing &amp;c.

Expenses

Total

It is submitted that this Report be approved.

and those who are to be tested are to be tested in accordance with the Rules made thereunder.

G.M. SWAN

Sd. R.

Approved by the Committee for the Class of M.E.S. on the

and to be tested in accordance with the Rules made thereunder.

CORRECTION

and to be tested in accordance with the Rules made thereunder.

Sd. R.

Sd. R.

Wood Harrington

W. S. Wainwright

W. S. Wainwright

W. S. Wainwright



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Visits

mt.

7/5/29

15 "

24 "

28 "

29 "

30 "



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