

No. 1908

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 1660 No. in Register Book 2919

FAIRMOUNT
S.S. METCALFE

Makers of Engines BOW, McLACHLAN & CO LTD

Works No. 3851

Makers of Main Boilers BOW, McLACHLAN & CO LTD

Works No. 1127/B

Makers of Donkey Boiler —

Works No. —

MACHINERY.



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002762-002769-0039

No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 1660 No. in Register Book 2919.

Received at Head Office

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the Single Triple Scotch Metcalfe

Official No.

Port of Registry IRVINE

Registered Owners THE INTERLAKE NAVIGATION CO LTD

MONTREAL

Engines Built by BOW, MCLACHLAN & CO LTD

at PAISLEY

Main Boilers Built by BOW MCLACHLAN & CO LTD

at PAISLEY

Donkey

at

Date of Completion 26-5-23

First Visit 28-12-22 Last Visit 26-5-23

Total Visits 42

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Works No. 3851 No. of Sets ONE Description TRIPLE EXPANSION,
SURFACE CONDENSING, DIRECT-ACTING, INVERTED.

No. of Cylinders each Engine **THREE** No. of Cranks **THREE.**

Diars. of Cylinders 16" 26 1/2" 44" Stroke 33"

Cubic feet in each L.P. Cylinder 28.43

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

" " " each Receiver? YES

Type of H.P. Valves, **PISTON TYPE (SOLID)**

" 1st I.P. " } ANDREWS

" 2nd I.P." } CAMERON'S PATENT BALANCED TYPE.

" L.P. " DOUBLE PORTED SLIDE VALVE

" Valve Gear STEVENSON'S DOUBLE LINK MOTION

Condenser SURFACE { WATER PASSES 2^{times} } Cooling Surface 850. sq. ft.

Diameter of Piston Rods (plain part) $4\frac{1}{2}$ Screwed part (bottom of thread) $3\frac{3}{4}$ 6 THRS/

Material " MILD STEEL

Diam. of Connecting Rods (smallest part) $4\frac{1}{2}$ " Material MILD STEEL

" Crosshead Gudgeons $4\frac{1}{2}"$ Length of Bearing 8 Material MILD STEEL

No. of Crosshead Bolts (each) 2 Diar. over Thrd. $2\frac{3}{8}$ Thrds. per inch 6 Material MILD STEEL

" Crank Pin " " 2 " 2 3/8 " 6 " MILD STEEL

" Main Bearings 6 Lengths $10\frac{1}{4}$

„ Bolts in each 2 Diar. over Thread $1\frac{7}{8}$ " Threads per inch 6 Material MILD STEEL

.. Holding Down Bolts, each Engine 43 Diar. $\frac{1}{4}$ No. of Metal Chocks 43

Are the Engines bolted to the Tank Top or to a Built Seat? To BUILT SEAT.

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

If not, how are they fitted?

[illegible]

Crossheads, No. of A.P. No. of I.P. No. of I.P. No. of H.P. Turbines

Connecting Rods, Finished by BOW, Mc LACHLAN & CO LTD

Piston " "

[illegible]

Date of Harbour Trial 17TH May 1923

" Trial Trip 22^{NO} MAY 1923

Trials run at FIRTH OF CLYDE

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

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

Pressure in 1st L.P. Receiver, 80 lbs., 2nd L.P., — lbs., L.P., 16 lbs., Vacuum, 25.3 ins.

Speed on Trial 11.18 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. 900 Revs. per min. 90

Estimated Speed 9 KNOTS

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TURBINE ENGINES.

Works No. _____ Type of Turbines _____

No. of H.P. Turbines _____ No. of L.P. _____ No. of L.P. _____ No. of Astern _____

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

Is Single or Double Reduction Gear employed? _____

Diam. of 1st Reduction Pinion _____ Width _____ Pitch of Teeth _____

" 1st " Wheel _____

Estimated Pressure per lineal inch _____

Diam. of 2nd Reduction Pinion _____ Width _____ Pitch of Teeth _____

" 2nd " Wheel _____

Estimated Pressure per lineal inch _____

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

" " I.P. " " _____

" " L.P. " " _____

" " 1st Reduction Shaft _____

" " 2nd " _____

" " Propeller Shaft _____

Total Shaft Horse Power _____

Date of Harbour Trial _____

" Trial Trip _____

Trials run at _____

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

Turbine Spindles forged by _____

" Wheels forged or cast by _____

Reduction Gear Shafts forged by _____

" Wheels forged or cast by _____

DESCRIPTION OF INSTALLATION.

No. of Turbo-Generating Sets _____ Capacity of each _____

Type of Turbine employed _____

Description of Generators _____

No. of Motors driving Propeller Shafts _____

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. _____



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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 _____

Revol. 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 Revols. 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.

Diam. of Intermediate Shafting by Rule _____ Actual _____

Diam. at Mid Length _____ Diam. at Coupling _____

Diam. of Propeller Shafts by Rule _____ Actual _____

Are Propeller Shafts fitted with Continuous Flange Discs? _____

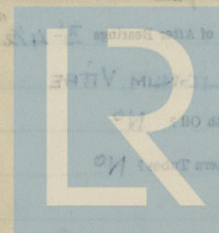
Diam. over Flange _____

Or what material are the After Bearings composed of? _____

Are Means provided for lubricating the After Bearings with Oil? _____

Is Lubrication of After Bearings the Same as that of the Propellers? _____

Is any other information required? _____



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SHAFTING.

Are the Crank Shafts Built or Solid?

BUILT

No. of Lengths in each

ONE

Angle of Cranks

120°

Diar. by Rule

8.59"

Actual

8 3/4"

In Way of Webs

8 13/16"

" of Crank Pins

8.75"

Length between Webs

10 1/4"

Greatest Width of Crank Webs

1'-4"

Thickness

5 1/2"

Least

1'-4"

"

5 1/2"

Diar. of Keys in Crank Webs

1 3/4"

Length

4"

Screwed or Plain

PLAIN

" Dowels in Crank Pins

1"

Length

4"

No. of Bolts each Coupling

6

Diar. at Mid Length

2 3/8"

Diar. of Pitch Circle

1'-2"

Greatest Distance from Edge of Main Bearing to Crank Web

1 1/4"

Type of Thrust Blocks

HORSE SHOE TYPE.

No.

" Rings (SHOES) 5

Diar. of Thrust Shafts at bottom of Collars

8 3/4"

No. of Collars

6

" Forward Coupling

8 3/4"

At Aft Coupling

8 3/4"

Diar. of Intermediate Shafting by Rule

Actual

No. of Lengths

No. of Bolts, each Coupling

Diar. at Mid Length

Diar. of Pitch Circle

Diar. of Propeller Shafts by Rule

9.75"

Actual

10"

At Couplings

9"

Are Propeller Shafts fitted with Continuous Brass Liners?

YES

Diar. over Liners

11 1/4"

Length of After Bearings

3'-4 1/2"

Of what Material are the After Bearings composed?

LIGNUM VITAE

Are Means provided for lubricating the After Bearings with Oil?

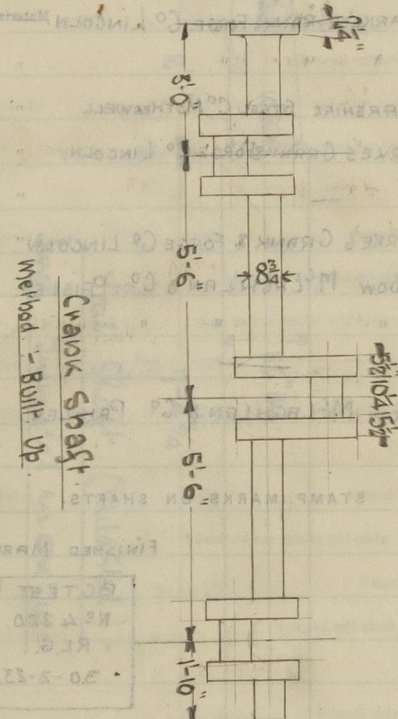
NO

" to prevent Sea Water entering the Stern Tubes?

NO

If so, what Type is adopted?

SKETCH OF CRANK SHAFT.



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No. of Blades each Propeller 4 Fitted or Solid? FITTED.
 Material of Blades CAST IRON. Boss CAST IRON.
 Diam. of Propellers 11'-2" Pitch 11'-3" Surface (each 54.2 S. ft.
 Coefficient of Displacement of Vessel at $\frac{1}{2}$ Moulded Depth

Crank Shafts Forged by CLARKE'S CRANK & FORGE CO LINCOLN Material MILD STEEL

" Pins " " " " "

" Webs " LANARSHIRE STEEL CO MOTHERWELL " "

Thrust Shafts " CLARKE'S CRANK & FORGE CO LINCOLN. " "

Intermed. " " " " "

Propeller " " CLARKE'S CRANK & FORGE CO LINCOLN "

Crank " Finished by BOW M'CLACHLAN & CO PAISLEY.

Thrust " " " " " "

Intermed. " " " " " "

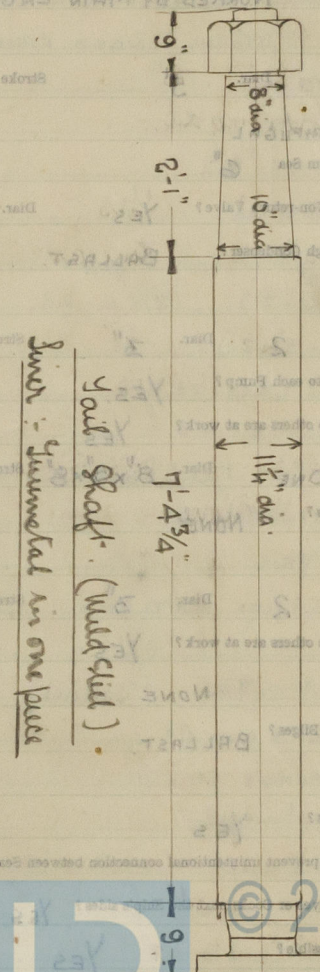
Propeller " " BOW M'CLACHLAN & CO PAISLEY.

STAMP MARKS ON SHAFTS.

FINISHED MARKS.

B.C. TEST.
 N° 4220.
 R.L.G.
 30-3-23.

SKETCH OF PROPELLER SHAFT.



PUMPS, ETC.

No. of Air Pumps ONE Diar. 14 1/2" Stroke 18"

Worked by Main or Independent Engines? WORKED BY MAIN ENGINES

No. of Circulating Pumps ONE Diar. 5" Stroke 4" ENGINE

Type of " CENTRIFUGAL

Diar. of " 6" Suction from Sea 6"

Has each Pump a Bilge Suction with Non-return Valve? YES Diar. 6"

What other Pumps can circulate through Condenser? BALLAST.

No. of Feed Pumps on Main Engine 2 Diar. 3" Stroke 18"

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. 8" x 5" x 8" Stroke DUPLEX D.A.

What other Pumps can feed the Boilers? NONE

No. of Bilge Pumps on Main Engine 2 Diar. 3" Stroke 18"

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

No. of Independent Bilge Pumps NONE

What other Pumps can draw from the Bilges? BALLAST.

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

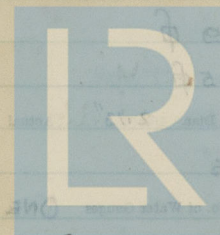
Are the Discharge Chests placed above or below the Deep Load Line? ABOVE

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. 1127/B.

No. of Boilers TWO. Type CYLINDRICAL MULTITUBULAR "SCOTCH"

Single or Double-ended FIRING SINGLE ENDED FIRING.

No. of Furnaces in each TWO

Type of Furnaces DEIGHTON

Date when Plan approved 23-12-22.

Approved Working Pressure 180 lbs.

Hydraulic Test Pressure 320 lbs.

Date of Hydraulic Test 18-4-23 21-4-23.

" when Safety Valves set 17-5-23.

Pressure at which Valves were set 180 lbs.

Date of Accumulation Test 22-5-23

Maximum Pressure under Accumulation Test 186 lbs.

System of Draught NATURAL

Can Boilers be worked separately? YES.

Makers of Plates STEEL CO OF SCOTLAND.

" Stay Bars " " " "

" Rivets RIVET BOLT & NUT CO.

" Furnaces LEEDS FORGE CO. LTD.

Greatest Internal Diam. of Boilers 11'-10"

" " Length " 10'-10"

Square Feet of Heating Surface each Boiler 1409 ϕ

" " Grate " " 38.5 ϕ

No. of Safety Valves each Boiler 2. Rule Diam. 2 1/3" Actual 2 1/2"

Are the Safety Valves fitted with Easing Gear? YES.

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

" Test Cocks THREE " Salinometer Cocks ONE

Are the Water Gauges fitted direct to the Boiler Shells or mounted on Pipes? ON PIPES

Are the Water Gauge Fittings fitted direct to the Boiler Shells or connected by Pipes? BY PIPES

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

Are Blow-off Cocks or Valves fitted on Boiler Shells? VALVES ON BOILER SHELLS

No. of Stoppers of Shell Fittings in each Boiler ONE

Plates in each Space TWO

Thickness of Shell Plates Approved 1

" in Boilers 1

Are the Rivets Iron or Steel? STEEL

Are the Longitudinal Stems Joint or Lap Joints? BUTT

Are the Joint Stamps Single or Double? DOUBLE

Are the Double Joint Stamps of equal width? YES

Thickness of outside Joint Stamps 3/16"

Inside 1/8"

Are Longitudinal Stems Hand or Machine Riveted? MACHINE

Are they Single, Double, or Triple Riveted? TRIPLE

No. of Rivets in a Pitch 2

Pitch of Rivets 5 1/2"

No. of Rows of Rivets in Double Circumferential Stems Rule

Are these Stems Hand or Machine Riveted? Rule

Area of Rivet Hole 14.09 = 4.25 x 3.32

7532 x 2.5 x 2

No. of Rows of Rivets in Front End Circumferential Stems TWO

Are these Stems Hand or Machine Riveted? MACHINE

Pitch of Rivets 5 1/2"

No. of Rows of Rivets in Back End Circumferential Stems TWO

Are these Stems Hand or Machine Riveted? MACHINE

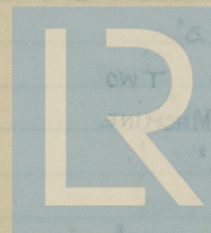
Pitch of Rivets 5 1/2"

No. of Rows of Rivets in Back End Circumferential Stems TWO

Are these Stems Hand or Machine Riveted? MACHINE

Pitch of Rivets 5 1/2"

Dimensions of Connecting Flange 5-4 1/2 x 5-5



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

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

Are these Pipes connected to Boilers by Cocks or Valves?

COCKS

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

VALVES ON BOILER SHELL.

No. of Strakes of Shell Plating in each Boiler

ONE

Plates in each Strake

TWO

Thickness of Shell Plates Approved

1"

in Boilers

1"

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

$\frac{25}{32}$ "

inside

$\frac{20}{32}$ "

Are Longitudinal Seams Hand or Machine Riveted?

MACHINE

Are they Single, Double, or Treble Riveted?

TREBLE

No. of Rivets in a Pitch

5

Diam. of Rivet Holes

$1\frac{1}{16}$ "

Pitch

$7\frac{5}{8}$ "

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

TWO

Are these Seams Hand or Machine riveted?

MACHINE

Diam. of Rivet Holes

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

Pitch

3"

No. of Rows of Rivets in Back End Circumferential Seams

TWO

Are these Seams Hand or Machine Riveted?

MACHINE

Diam. of Rivet Holes

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

Pitch

3"

Size of Manholes in Shell

16×12 "

Dimensions of Compensating Rings

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



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Thickness of End Plates in Steam Space Approved 1"

" " " " " in Boilers 1"

Pitch of Steam Space Stays 1'-4" x 1'-3"

Diar. " " " " Approved 2 7/8" Threads per Inch 6.

" " " " " in Boilers 2 7/8" " 6

Material of " " " STEEL

How are Stays Secured? DOUBLE NUTS.

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 — Threads per Inch —

" " " in Boilers " —

Material " —

Are Stays fitted with Nuts outside? —

Thickness of Back End Plates at Bottom Approved 1"

" " " " " in Boilers 1"

Pitch of Stays at Wide Spaces between Fireboxes 14' 4" x 9"

Thickness of Doublings in " " —

Thickness of Front End Plates at Bottom Approved 1"

" " " " " in Boilers 1"

No. of Longitudinal Stays in Spaces between Furnaces TWO.

Thickness of End Plates Approved 1"

" " " " " in Boilers 1"

Pitch of Steam Space Stays 1'-4" x 1'-3"

Diar. " " " " Approved 2 7/8" Threads per Inch 6.

" " " " " in Boilers 2 7/8" " 6

Material of " " " STEEL

How are Stays Secured? DOUBLE NUTS.

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 — Threads per Inch —

" " " in Boilers " —

Material " —

Are Stays fitted with Nuts outside? —

Thickness of Back End Plates at Bottom Approved 1"

" " " " " in Boilers 1"

Pitch of Stays at Wide Spaces between Fireboxes 14' 4" x 9"

Thickness of Doublings in " " —

Thickness of Front End Plates at Bottom Approved 1"

" " " " " in Boilers 1"

No. of Longitudinal Stays in Spaces between Furnaces TWO.



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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

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

" " " " in Boilers

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

Pitch of Screwed Stays in C.O. Sides

9" x 9"

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

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

" " " " in Boilers

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

Pitch of Screwed Stays in C.O. Backs

9" x 9"

Diar. " " Approved

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

Threads per Inch

9

" " " in Boilers

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

9

Material " "

STEEL

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

YES

Thickness of Combustion Chamber Bottoms

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

No. of Girders over each Wing Chamber

5"

" " " Centre "

—

Depth and Thickness of Girders

8"

Material of Girders

STEEL

No. of Stays in each

2

No. of Tubes, each Boiler

182

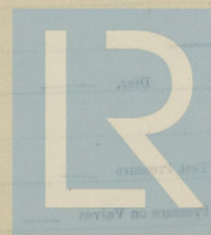
Size of Lower Manholes

16" x 12"

VERTICAL DONKEY BOILERS

No. of Boilers _____ Type _____
 Greatest Lin. Dim. _____ Height _____
 Height of Boiler Crown above the Grate _____
 Are Boiler Crowns Flat or Dished? _____
 Internal Radius of Dished Ends _____
 Description of Beams in Boiler Crown _____
 Diam. of Rivet Holes _____
 Height of Firebox Crown above the Grate _____
 Are Firebox Crowns Flat or Dished? _____
 External Radius of Dished Crowns _____
 No. of Crown Stays _____
 External Diam. of Firebox at Top _____
 Bottom _____
 No. of Water Tubes _____
 Material of Water Tubes _____
 Size of Manhole in Shell _____
 Dimensions of Combustion Ring _____
 Heating surface each Boiler _____
 Gross 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.

No. of Pipes — TWO

Material — STEEL

Joined, Welded or Seamed — Solid Drawn

Internal Diar. — 32"

Thickness — 5/16"

How are Flanges secured? — SCREWED WITH VANISHING THREAD

Date of Hydraulic Test — 2-2-23

Test Pressure — 240 lbs

No. of Pipes — TWO

Material — STEEL

Joined, Welded or Seamed — Solid Drawn

Internal Diar. — 32"

Thickness — 5/16"

How are Flanges secured? — SCREWED WITH VANISHING THREAD

Date of Hydraulic Test — 2-2-23

Test Pressure — 240 lbs



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MAIN STEAM PIPES.

No. of Lengths	TWO		
Material	STEEL		
Brazed, Welded or Seamless	SOLID DRAWN.		
Internal Diam.	3 1/2"		
Thickness	3/16"		
How are Flanges secured?	SCREWED WITH VANISHING THREAD.		
Date of Hydraulic Test	26-4-23		
Test Pressure	540 lbs.		
No. of Lengths	TWO		
Material	STEEL		
Brazed, Welded or Seamless	SOLID DRAWN.		
Internal Diam.	3 1/2"		
Thickness	3/16"		
How are Flanges secured?	SCREWED WITH VANISHING THREAD.		
Date of Hydraulic Test	2-5-23		
Test Pressure	540 lbs.		
No. of Lengths	/		
Material			
Brazed, Welded or Seamless			
Internal Diam.			
Thickness			
How are Flanges secured?			
Date of Hydraulic Test			
Test Pressure			



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EVAPORATORS.

No. — Type — Tons per Day —
 Makers —
 Working Pressure — Test Pressure — Date of Test —
 Date of Test of Safety Valves under Steam —

FEED WATER HEATERS.

No. ONE Type GRAVITATION SUCTION
 Makers DAVIE & HORNE LTD. N° 3376
 Working Pressure 180 lbs. Test Pressure 400 lbs. Date of Test 9-2-23.

FEED WATER FILTERS.

No. ONE Type SURFACE Size 2 1/2"
 Makers DAVIE & HORNE LTD. N° 3377.
 Working Pressure 180 lbs. Test Pressure ATMOs. Date of Test 22-5-23.

LIST OF DONKEY PUMPS.

BALLAST PUMP BOW McLACHLAN 7" x 5" x 8"
 AUX FEED PUMP DAWSON & DOWNIE 8" x 5" x 8" N° 5806.
 SANITARY PUMP. WORTHINGTON 4 1/2" x 2 3/4" x 4"
 CENTRIFUGAL PUMP. BOW McLACHLAN 6" INLET.
 REVERSING ENGINE McTAGGART & SCOTT.
 STEERING ENGINE DANKIN & CO LTD N° 4886.
 ELECTRIC ENGINE E.S. HINDLEY & SONS N° 7493-4



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SPARE GEAR LIST

No. of Top End Bolts	2	No. of Bot. End Bolts	2	No. of Cylinder Cover Studs	6
" Coupling Bolts	6	" Main Bearing Bolts	2	" Valve Chest "	6
" Junk Ring Bolts	3	" Feed Pump Valves	1 SET	" Bilge Pump Valves	1 SET
" H.P. Piston Rings	-	" I.P. Piston Rings	-	" L.P. Piston Rings	-
" Springs	2	" Springs	-	" Springs	-
" Safety Valve "	1	" Fire Bars	1/2 SET	" Feed Check Valves	2 MAIN
" Piston Rods	-	" Connecting Rods	-	" Valve Spindles	-
" Air Pump Rods	1	" Air Pump Buckets	-	" Air Pump Valves	1 SET
" Cir.	-	" Cir.	-	" Cir.	-
" Crank Shafts	-	" Crank Pin Bushes	-	" Crosshead Bushes	-
" Propeller Shafts	-	" Propellers	-	" Propeller Blades	2
" Boiler Tubes	6	" Condenser Tubes	10	" Condenser Ferrules	24

OTHER ARTICLES OF SPARE GEAR:-

6 BARS OF IRON.

2 CWT PLATE ASSORTED.

50 BOLTS & NUTS.

1 ESCAPE VALVE SPRING EACH SIZE FITTED.

1 " " " FEED PUMP.

12 GAUGE GLASSES.

REFRIGERATORS



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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? _____

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	32	10.8	7/11	4.29
Engine Room	32	7.4	7/11	4.29
Forward Cargo	32	4.3	7/11	4.29
Ort	32	12.4	7/11	4.29
Cargo	32	10.8	7/11	4.29
Special Insulation	32	7.3	7/11	4.29

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



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No. and Description of Dynamos ONE COMPOUND WOUND.

Makers of Dynamos ELECTRIC CONSTRUCTION CO. LTD. N^o 53424.

Capacity " 7.5 Kw 68 Amperes, at 100 Volts, 600 Revols. per Min.

Current Alternating or Continuous CONTINUOUS.

Single or Double Wire System DOUBLE WIRE

Position of Dynamos PORT SIDE OF ENGINE WKS MID PLATFORM FORWARD.

"	Main Switch Board	"	"	"	"	"	AFT.
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No. of Circuits to which Switches are provided on Main Switch Board	5
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Particulars of these Circuits:—

Circuit.	Number of Lights.	Candle Power.	Current Required. Amps.	Size of Conductor.	Current Density.	Conductivity of Conductor.	Insulation Resistance per Mile.
1 NAVIGATION	4	32	10.8	7/036	8.8.29		
2 ENGINE ROOM.	16	32	7.4	7/036	"		
3 FORWARD CIRCUIT	31	32	6.3	7/036	"		
4 AFT "	27	32	12.4	7/036	"		
5 CARGO	20	32	10.8	7/036	"		
SPECIAL INDICATOR.	2	36	7.3	7/036	"		

Total No. of Lights 100 No.

Total No. of English 700

Current required for Motors and Heaters

Total No. of Lights	100	No. of Motors driving Fans, &c.	2	No. of Heaters	
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Current required for Motors and Heaters

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Fans, &c. **No. of Heaters**

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

Distribution Fuse Boards in Saloon Passage

Stairway aft.

Chart Room.

Engine Room.

Are Out-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 Out-outs constructed of Non-Inflammable Material?

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

Smallest Single Wire used, No. $\frac{1}{4}$ 044 S.W.G., Largest, No. 19/064 S.W.G.

How are Conductors in Engine and Boiler Spaces protected?

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

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp

(2) " passing through Bunkers or Cargo Spaces

(3) " " Deck Beams or Bulkheads

Are all Joints in 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?

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?

Is the Installation supplied with a Voltmeter?

" " " an Ampere Meter?

Date of Trial of complete Installation *22.5.23*

Duration of Trial *4 hours*

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

Robert Knig.

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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.

Have Tests been made to prove that this condition has been satisfactorily fulfilled?

Has the Installation Resistance over the whole system been tested?

What was the Resistance amount to?

Is the Installation supplied with a Voltmeter?

as Ampere Meter

Date of Trial of complete Installation

Have all the requirements of Section 12 been satisfactorily carried out?

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.**

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

The above correctly describes the Machinery of the S.S. "METCALFE"

as ascertained by ^{me} from personal examination

What special provision is provided in the following cases? No exceptional conditions

(1) Condensers exposed to Heat of Steam

(2) Boilers passing through Buckers or Cargobays

(3) Deck Boilers or Portlands

Robert H. Craig

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

Fees—

MAIN BOILERS.

	Sq. ft.	£	s.	d.
H.S.	22	3	0	
G.S.	"	:	:	

DONKEY BOILERS.

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

ENGINES.

	Cub. ft.	£	s.	d.
L.P.O.	24	10	0	
Testing, &c. ...		:	:	
		£	:	:
Expenses ...		:	:	
Total ...		£	46	13

It is submitted that this Report be approved,

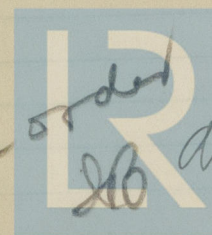
W. H. King
Chief Surveyor.

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

20 June 1923

Fees advised

Fees paid



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Secretary.

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