

Lithgows L^{td} 791

No. 2141

TRANSFERRED TO:
L R SYSTEM

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 1949 No. in Register Book 3310

T.S.S. "Arakoon" TRANSFERRED TO
L R SYSTEM

Makers of Engines David Rowan & Co. L^{td}

Works No. 839

Makers of Main Boilers [same.]

Works No. "

Makers of Donkey Boiler [none.]

Works No. "

MACHINERY.



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008096-008100-0109

No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. No. in Register Book

Received at Head Office

2nd October 1926.

Surveyor's Report on the ~~Neto~~ Engines, Boilers, and Auxiliary
Machinery of the ~~Single Triple~~ ~~Twin Quadruple~~ Screw Steamer

"Arakoon"

Official No.

Port of Registry

Registered Owners

North Coast Steam Navigation
Company, Limited; Sydney, Australia.

Engines Built by

David Rowan & Co. Ltd.

at

Elliot Street, Glasgow.

Main Boilers Built by

[same]

at

Donkey

[none]

at

Date of Completion

22/9/26.

Last Visit

22/12/25

Last Visit

22/9/26.

Total Visits

34

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RECIPROCATING ENGINES.

Works No. **839** No. of Sets **2** Description **Inverted vertical direct-acting steam.**

No. of Cylinders each Engine **3** No. of Cranks **3**
 Diars of Cylinders **11" , 18" and 29" Stroke 22"**
 Cubic feet in each L.P. Cylinder **8.41**

Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr? **Yes.**
 " " " each Receiver? **M.P. & L.P. at sides only.**

Type of H.P. Valves, **Piston.**
 " **1st L.P. " M.P.**
 " **2nd L.P. " Andrews & Cameron.**

" **L.P. " Slide.**
 " Valve Gear **Stephenson link motion.**

" Condenser **Surface** Cooling Surface **500** sq. ft.
 Diameter of Piston Rods (plain part) **3"** Screwed part (bottom of thread) **2½"**

Material **Steel.**
 Diam. of Connecting Rods (smallest part) **2¾"** Material **Steel.**

" Crosshead Gudgeons **3½"** Length of Bearing **5½"** Material **"**
 No. of Crosshead Bolts (each) **2** Diam. over Thrd. **2"** Thrds. per inch **Material Steel.**

" Crank Pin " **2** " **1¾"** " **"**
 " Main Bearings **6** Lengths **6¼"** " **"**

" Bolts in each **2** Diam. over Thread **1½"** Threads per inch **Material Steel.**
 " Holding Down Bolts, each Engine **44** Diam. **1"** No. of Metal Chocks

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 **D. Rowan & Co. Ltd.**
 Piston " " } " " " " " " " " " " " "

Crossheads, " " " " " " " " " " " " " "

Connecting Rods, Finished by " " " " " " " " " " " " " "

Piston " " " " " " " " " " " " " "

Crossheads, " " " " " " " " " " " " " "

Date of Harbour Trial **2/9/26.**

" Trial Trip **22/9/26**

Trials run at **Skelmorlie and Hirth of Clyde.**

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

If so, what was the L.H.P.? **850** Revols. per min. **143**

Pressure in 1st L.P. Receiver, **175** lbs., 2nd L.P., **58** lbs., L.P., **14** lbs., Vacuum, **25** ins.

Speed on Trial **10.3 Knots.**

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

data:—

Builders' estimated L.H.P. **860** Revols. per min. **152**

Estimated Speed " " " "

" " " "

" " " "

2 Reversing Engines 5' x 6" by

MacLaggart, Scott & Co. Ltd.,

Edinburgh.



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TURBINE ENGINES.

Works No.	Type of Turbines		
No. of H.P. Turbines	No. of I.P.	No. of L.P.	No. of Astern
Are the Propeller Shafts driven direct by the Turbines or through Gearing?			
Is Single or Double Reduction Gear employed?			
Diam. of 1st Reduction Pinion	} Width	Pitch of Teeth	
" 1st " Wheel		This Trip	
Estimated Pressure per lineal inch	Date of Harbour Trial		
Diam. of 2nd Reduction Pinion	} Width	Pitch of Teeth	
" 2nd " Wheel		This Trip	
Estimated Pressure per lineal inch	Date of Harbour Trial		
Revs. per min. of H.P. Turbines at Full Power	S.H.P.		
" " I.P. " "	If the Conditions on Trial were such that the above records were not obtained, give estimated		
" " L.P. " "	Date		
" " 1st Reduction Shaft	Estimated Speed		
" " 2nd " "	Estimated Speed		
" " Propeller Shaft	Estimated Speed		
Total Shaft Horse Power	S.H.P.		
Date of Harbour Trial	This Trip		
" Trial Trip	This Trip		
Trials run at	This Trip		
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		

TURBO-ELECTRIC MACHINERY. DESCRIPTION OF INSTALLATION.

No. of Turbo-Generators	Capacity of each	
Type of Turbines 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		
Date of Harbour Trial		
Diam. of 1st Reduction Pinion	} Width	
" 1st " Wheel		
Estimated Pressure per lineal inch	Date of Harbour Trial	
Diam. of 2nd Reduction Pinion	} Width	
" 2nd " Wheel		
Estimated Pressure per lineal inch	Date of Harbour Trial	
Revs. per min. of Generators at Full Power	S.H.P.	
" " Propeller at Full Power	S.H.P.	
Total Shaft Horse Power	S.H.P.	
Date of Harbour Trial	This Trip	
" Trial Trip	This Trip	
Trials run at	This Trip	
Speed on Trial	Knots.	Propeller Revs. per min.
Turbine Spindles forged by		
" Wheels forged or cast by		
Reduction Gear Shafts forged by		
" Wheels forged or cast by		



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TURBO-ELECTRIC PROPELLING MACHINERY.

No. of Turbo-Generating Sets Capacity of each

Type of Turbines employed

Description of Generators

No. of Motors driving Propeller Shafting

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

Is Single or Double Reduction Gear employed?

Description of Motors

Diam. of 1st Reduction Pinion

" 1st " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

" 2nd " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

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.



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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

5.839

Actual

6"

In Way of Webs

6 1/4"

" of Crank Pins

6"

Length between Webs

6 1/4"

Greatest Width of Crank Webs

11 1/2"

Thickness

4"

Least " "

parallel

Size of Keys in Crank Webs

1 1/8" x 1/16"

Length

4" (3/8 sc'd pin)

Diar. Pins in Crank Pins

3/4"

Length

1 3/4"

Screwed or Plain

Screwed.

No. of Bolts each Coupling

6

Diar. at Mid Length

1 1/2"

Diar. of Pitch Circle

9 1/4"

Greatest Distance from Edge of Main Bearing to Crank Web

1/4"

* *parallel bolts.*

Type of Thrust Blocks

Horse - Shoe.

No. " Rings

4

Diar. of Thrust Shafts at bottom of Collars

6 1/4"

No. of Collars

4

" " Forward Coupling

6"

At Aft Coupling

6"

Diar. of Intermediate Shafting by Rule

5.561"

Actual

5 3/4"

No. of Lengths

3

No. of Bolts, each Coupling

6

Diar. at Mid Length

1 1/2"

Diar. of Pitch Circle

9 1/4"

Diar. of Propeller Shafts by Rule

6.186"

Actual

6 3/8"

At Couplings

6"

Are Propeller Shafts fitted with Continuous Brass Liners?

Yes.

Diar. over Liners

4 7/8"

Length of After Bearings

11" forward

Of what Material are the After Bearings composed?

2-1 1/2" aft. Lignum vitae.

Are Means provided for lubricating the After Bearings with Oil?

Yes.

" " to prevent Sea Water entering the Stern Tubes?

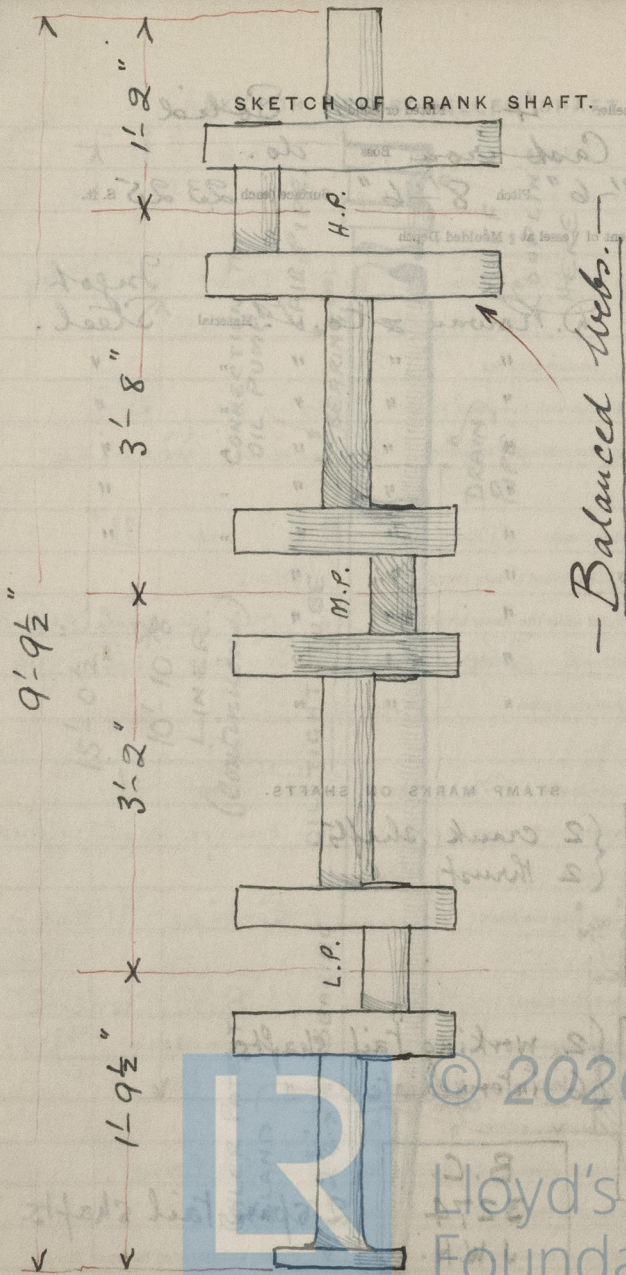
"

If so, what Type is adopted?

Syler.

* *Muff coupling.*

SKETCH OF CRANK SHAFT.



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No. of Blades each Propeller

4

Fitted or Solid?

Solid

Material of Blades

Cast iron

Boss

do.

Diam. of Propellers

7'-6"

Pitch

8'-6"

Surface (each)

23.25 S. ft.

Coefficient of Displacement of Vessel at $\frac{1}{2}$ Moulded Depth

Crank Shafts Forged by

D. Rowan & Co. Ltd.

Material

Ingot Steel.

" Pins "

"

"

"

"

"

" Webs "

"

"

"

"

"

Thrust Shafts "

"

"

"

"

"

Intermed. " "

"

"

"

"

"

Propeller " "

"

"

"

"

"

Crank " Finished by

"

"

"

"

"

Thrust " "

"

"

"

"

"

Intermed. " "

"

"

"

"

"

Propeller " "

"

"

"

"

"

STAMP MARKS ON SHAFTS.

B.C.

10226

G.M.L.

22/6/26

{ 2 crank shafts.
2 Thrust "

B.C.

3272

G.M.L.

24/6/26

{ 2 working tail shafts.
6 intermediate "

B.C.

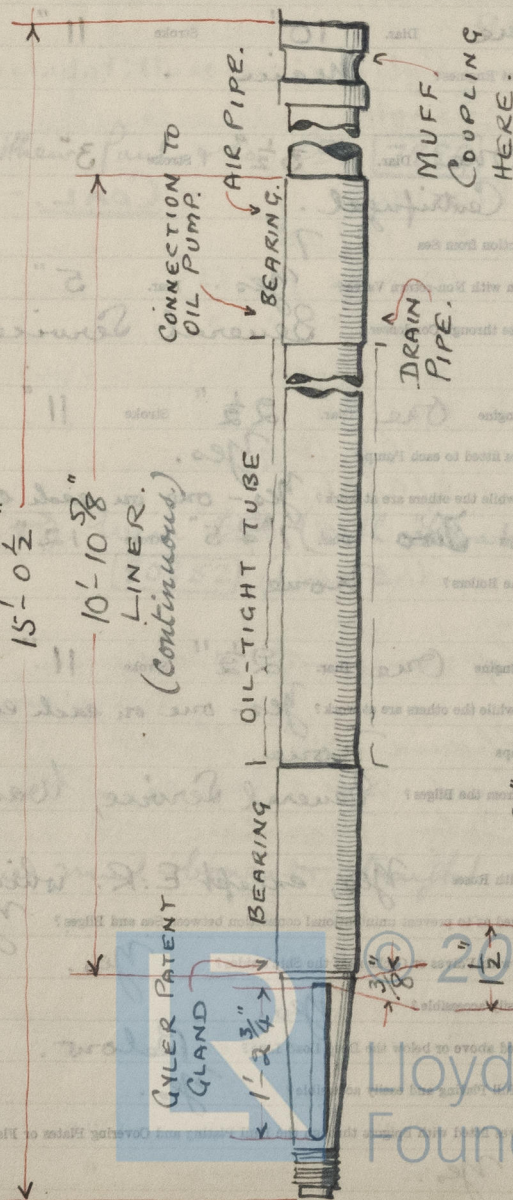
3274

J.W.H.

6/8/26

2 spare tail shafts.

SKETCH OF PROPELLER SHAFT.



PUMPS, ETC.

No. of Air Pumps *One* Diar. *10"* Stroke *11"*
 Worked by Main or Independent Engines? *Main*

No. of Circulating Pumps *One* Diar. *3½"* Stroke *3"* by
 Type of *Centrifugal*
 Diar. of *"* Suction from Sea *7"*
 Has each Pump a Bilge Suction with Non-return Valve? *Yes* Diar. *5"*
 What other Pumps can circulate through Condenser? *General Service*

No. of Feed Pumps on Main Engine *One* Diar. *2½"* Stroke *11"*
 Are Spring-loaded Relief Valves fitted to each Pump? *Yes*
 Can one Pump be overhauled while the others are at work? *Yes - one on each engine*

No. of Independent Feed Pumps *Two* Diar. *7" & 5"* Stroke *12"* by
 What other Pumps can feed the Boilers? *None*

No. of Bilge Pumps on Main Engine *One* Diar. *2½"* Stroke *11"*
 Can one Pump be overhauled while the others are at work? *Yes - one on each engine*

No. of Independent Bilge Pumps *None*
 What other Pumps can draw from the Bilges? *General Service, Wash-Deck*

Are all Bilge Suctions fitted with Roses? *Yes, except E.R. which*
 Are the Valves, etc., so arranged as to prevent unintentional connection between Sea and Bilges? *Yes*
 Are all Sea Connections made with Valves or Cocks next the Ship's sides? *Yes*
 Are they placed so as to be easily accessible? *Yes*
 Are the Discharge Chests placed above or below the Deep Load Line? *Below*
 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*

Matthew Paul & Co. Ltd. 7889

S. & J. Weir Ltd. (with "Float Tank")
80852 (1 and 2)

have mud boxes & straight pipes



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BOILERS.

Works No. **839**

No. of Boilers **2** Type **Cylindrical multitubular.**

Single or Double-ended **Single**

No. of Furnaces in each **2**

Type of Furnaces **Morison - COAL.**

Date when Plan approved **23/12/25**

Approved Working Pressure **180 lbs. per sq. in.**

Hydraulic Test Pressure **320 " " "**

Date of Hydraulic Test **18/5/26**

" when Safety Valves set **2/9/26**

Pressure at which Valves were set **186 lb/sq. in.**

Date of Accumulation Test **2/9/26**

Maximum Pressure under Accumulation Test **192 lb/sq. in.**

System of Draught **Natural.**

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

Makers of Plates **Gutehoffnungshütte, Oberhausen, Germany.**

" Stay Bars **Phoenix A.G. Ruhrort, "**

" Rivets **Rivet Bolt Nut Co. Ltd.**

" Furnaces **John Marshall & Co.**

Greatest Internal Diam. of Boilers **12'-2"**

" " Length " **9'-11 1/4"**

Square Feet of Heating Surface each Boiler **1270**

" " Grate " " **37.4**

No. of Safety Valves each Boiler **One pair** Rule Diam. **2 1/2"** Actual **2 1/2"**

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

No. of Pressure Gauges, each Boiler **One**

" Test Cocks " **2**

" " " " " **Salinometer Cocks** **11**

1. Ash Ejector (F.J. Trucent & Proctor's patent)
 by **Mechanics Ltd.** Hopper **3206**

2. Temperature Balances (Brundrit)

Rings; - Port Boiler. Starboard Boiler.
 P. 1/4" S. 3/8" P. 7/8" S. 7/8"

Furnace plates by **Steel to of Scotland Ltd.**

by **A. Cockburn**



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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?

Direct.

Are these Pipes connected to Boilers by Cocks or Valves?

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

Valves on end plates

No. of Strakes of Shell Plating in each Boiler

One

Plates in each Strake

2

Thickness of Shell Plates Approved

1"

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

3/4"

inside

7/8"

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 7/16"

Pitch

7 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

2

Are these Seams Hand or Machine riveted?

Hand

Diam. of Rivet Holes

1 7/16"

Pitch

2.85"

No. of Rows of Rivets in Back End Circumferential Seams

2

Are these Seams Hand or Machine Riveted?

Machine.

Diam. of Rivet Holes

1 7/16"

Pitch

2.85"

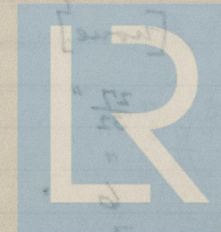
Size of Manholes in Shell

16" x 12"

Dimensions of Compensating Rings

(oval)

x 2'-7"



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Thickness of End Plates in Steam Space Approved

1"

" " " " " in Boilers

Pitch of Steam Space Stays

1'-4" x 1'-3 3/4"

Diar. " " " " Approved

2 1/2" Threads per Inch

6

" " " " " in Boilers

Material of " " "

Steel.

How are Stays Secured?

Nuts inside and outside.

Diar. and Thickness of Loose Washers on End Plates

[none.]

" " Riveted " " "

"

Width " " Doubling Strips "

"

Thickness of Middle Back End Plates Approved

3/4"

" " " " " in Boilers

Thickness of Doublings in Wide Spaces between Fireboxes

[none.]

Pitch of Stays at

" " " "

13 1/8" x 8 3/4"

Diar. of Stays Approved

1 3/4"

Threads per Inch

9

" " " " in Boilers

Material "

Steel

Are Stays fitted with Nuts outside?

Yes.

Thickness of Back End Plates at Bottom Approved

3/4"

" " " " " in Boilers

Pitch of Stays at Wide Spaces between Fireboxes

(widening - various:)

Thickness of Doublings in " "

[none.]

Thickness of Front End Plates at Bottom Approved

27/32"

" " " " " in Boilers

No. of Longitudinal Stays in Spaces between Furnaces

6

[3 round each manhole.]



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Diar. of Stays Approved $2\frac{1}{4}"$ Threads per Inch 6
 " " in Boilers "
 Material " Steel.

Thickness of Front Tube Plates Approved $\frac{27}{32}"$
 " " " " in Boilers " Steel

Pitch of Stay Tubes at Spaces between Stacks of Tubes $1'-1\frac{3}{8}" \times 8\frac{3}{4}"$

Thickness of Doublings in " " " [none.]

" Stay Tubes at " " " $\frac{5}{16}"$

Are Stay Tubes fitted with Nuts at Front End? Alternate stay tubes.

Thickness of Back Tube Plates Approved $\frac{23}{32}"$

" " " in Boilers "

Pitch of Stay Tubes in Back Tube Plates $11\frac{1}{4}" \times 8\frac{3}{4}"$

" Plain " $4\frac{1}{2}" \times 4\frac{3}{8}"$

Thickness of Stay Tubes $\frac{1}{4}"$, $\frac{5}{16}"$ and $\frac{3}{8}"$ (two inner top

" Plain " 9 W.G.

External Diar. of Tubes $3\frac{1}{4}"$

Material " Lapwelded Iron.

Thickness of Furnace Plates Approved $\frac{17}{32}"$

" " " in Boilers "

Smallest outside Diar. of Furnaces $3'-6\frac{1}{16}"$

Length between Tube Plates $6'-6"$

Width of Combustion Chambers (Front to Back) $2'-7\frac{5}{8}"$

Thickness of " " Tops Approved $\frac{11}{16}"$

" " " in Boilers "

Pitch of Screwed Stays in C.C. Tops $10\frac{1}{8}" \times 9"$

Diar. of Screwed Stays Approved $2\frac{1}{4}"$ Threads per Inch 6
 " " in Boilers "
 Material " Steel.

Thickness of Front Tube Plates Approved $\frac{27}{32}"$
 " " " " in Boilers " Steel

Pitch of Stay Tubes at Spaces between Stacks of Tubes $1'-1\frac{3}{8}" \times 8\frac{3}{4}"$

Thickness of Doublings in " " " [none.]

" Stay Tubes at " " " $\frac{5}{16}"$

Are Stay Tubes fitted with Nuts at Front End? Alternate stay tubes.

Thickness of Back Tube Plates Approved $\frac{23}{32}"$

" " " in Boilers "

Pitch of Stay Tubes in Back Tube Plates $11\frac{1}{4}" \times 8\frac{3}{4}"$

" Plain " $4\frac{1}{2}" \times 4\frac{3}{8}"$

Thickness of Stay Tubes $\frac{1}{4}"$, $\frac{5}{16}"$ and $\frac{3}{8}"$ (two inner top

" Plain " 9 W.G.

External Diar. of Tubes $3\frac{1}{4}"$

Material " Lapwelded Iron.

Thickness of Furnace Plates Approved $\frac{17}{32}"$

" " " in Boilers "

Smallest outside Diar. of Furnaces $3'-6\frac{1}{16}"$

Length between Tube Plates $6'-6"$

Width of Combustion Chambers (Front to Back) $2'-7\frac{5}{8}"$

Thickness of " " Tops Approved $\frac{11}{16}"$

" " " in Boilers "

Pitch of Screwed Stays in C.C. Tops $10\frac{1}{8}" \times 9"$



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Diam. of Screwed Stays Approved

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

Threads per Inch

9

" " " in Boilers

Material " "

Steel.

Thickness of Combustion Chamber Sides Approved

 $\frac{11}{16}"$

" " " in Boilers

Pitch of Screwed Stays in C.O. Sides

 $10\frac{1}{8}" \times 9"$

Diam. " " Approved

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

Threads per Inch

9

" " " in Boilers

Material " "

Steel.

Thickness of Combustion Chamber Backs Approved

 $\frac{21}{32}"$

" " " in Boilers

Pitch of Screwed Stays in C.O. Backs

 $9\frac{1}{2}" \times 8\frac{3}{4}"$

Diam. " " Approved

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

Threads per Inch

9

" " " in Boilers

Material " "

Steel.

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

Yes.

Thickness of Combustion Chamber Bottoms

 $\frac{1}{16}"$

[not thickened]

No. of Girders over each Wing Chamber

5

" " " Centre "

[none]

Depth and Thickness of Girders

 $7\frac{3}{8}" \times \frac{7}{8}"$ [double.]

Material of Girders

Steel.

No. of Stays in each

2

No. of Tubes, each Boiler

184

Size of Lower Manholes

 $16" \times 12"$

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 Heads	Thickness of Plates
Description of Seams in Boiler Crowns	Width of Crowns
Diam. of Rivet Holes	Height of Window Crowns above Fire Grate
Are Window Crowns Flat or Dished?	Are Window Crowns Flat or Dished?
Internal Radius of Dished Crowns	Thickness of Plates
No. of Crown Stays	Diam.
Material of Plates	Thickness of Plates
Material of Water Tubes	No. of Water Tubes
Size of Manhole in Shell	Material of Water Tubes
Dimensions of Compensation Ring	Height of Water Tubes
Heating Surface, each Boiler	Grate Surface

SUPERHEATERS

[None]



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VERTICAL DONKEY BOILERS.

No. of Boilers Type

Greatest Int. Diar. Height

Height of Boiler Crown above Fire Grate [None.]

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 [None.]

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

Material

Braced, Welded or Riveted

Internal Diar.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

No. of Pipes

Material

Braced, Welded or Riveted

Internal Diar.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

No. of Pipes

Material

Braced, Welded or Riveted

Internal Diar.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure



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MAIN STEAM PIPES.

No. of Lengths	4		
Material	Steel		
Brazed, Welded or Seamless	Seamless		
Internal Diam.	3 1/2"		
Thickness	1/4"		
How are Flanges secured?	Screwed & expanded.		
Date of Hydraulic Test	2 on 4/8/26; (C) 2 on 23/8/26 (H)		
Test Pressure	540 lb/sq. in.		
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			

3142 STEERING GEAR. T. Hestie & Co. Ld., Greenock.
 One 2 sp. steam, spur & pinion, with cast-iron
 chain barrel.
 180 lb/sq. in. Test Pressure. 25/8/26 (A.M.)
 Working Pressure 25 lb/sq. in.
 Date of Test 25/8/26
 13528 FEED WATER FILTERS. One in. 18" diam. 25" high.
 13527 FEED WATER HEATERS. One in. 18" diam. 25" high.
 13525 1 1/2" x 4 1/2" x 8" vertical duplex.



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EVAPORATORS.

3690

No. One Type Vertical Tons per Day 6
 Makers Davie & Horne Ltd. Johnstone.
 Working Pressure 25 lb/□ Test Pressure 50 lb/□ Date of Test 25/5/26.
coils 400" (G.S.M.)
 Date of Test of Safety Valves under Steam 2/9/26

FEED WATER HEATERS.

80851

No. One Type Direct Contact, 17"
 Makers S. J. Weir Ltd.
 Working Pressure 20 lb/□ Test Pressure 40 lb/□ Date of Test 19/5/26.

FEED WATER FILTERS.

No. One Type Pressure. Size 2"
 Makers Davie & Horne Ltd.
 Working Pressure 180 lb/□ Test Pressure 432 lb/□ Date of Test 25/5/26.
Relief valve set at 216 lb/□. (G.S.M.)

STEERING GEAR. 3145

J. Hastie & Co. L^{td}, Greenock.
 One 2 cyl. steam, spur & pinion, with extended chain barrel.

LIST OF DONKEY PUMPS.

Ballast — None fitted.

General Service by Thom, Lamont & Co. Ltd.
7½" + 4½" x 8" vertical duplex. 13525

Sanitary by same makers. 13528
5" + 5" x 6" vert. duplex.

Wash-Deck by same makers. 13527
6" + 4¼" x 6" vert. duplex.

Fresh Water by same makers.
3¼" + 3" x 4" vert. duplex.



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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	8	" Main Bearing Bolts	2	" Valve Chest "	6
" Junk Ring Bolts		" Feed Pump Valves	1 Set	" Bilge Pump Valves	1 Set
" H.P. Piston Rings	1 Set	" I.P. Piston Rings	1 Set	" L.P. Piston Rings	1 Set
" Springs		" Springs	8	" Springs	2 main 2 aux.
" Safety Valve "	2	" Fire Bars	1/4 of total.	" Feed Check Valve	
" Piston Rods	1	" Connecting Rods		" Valve Spindles	
" Air Pump Rods	1	" Air Pump Buckets	1	" Air Pump Valves	1 Set.
" Cir. "		" Cir. "		" Cir. "	
" Crank Shafts		" Crank Pin Bushes	1 pair	" Crosshead Bushes	1
" Propeller Shafts	2	" Propellers	2 c.i.	" Propeller Blades	
" Boiler Tubes	10	" Condenser Tubes	50	" Condenser Ferrules	100

OTHER ARTICLES OF SPARE GEAR:-

- 1 Circulating Pump Impeller & Shaft.
 1 Set Wearing Plates for Ash Ejector
 (no bend) discharge bend.
 1 Shuttle Valve & Chest for Weir's
 pump.
 100 Assorted black iron bolts, nuts,
 & washers.
 12 " brass do. do. do.
 50 " iron finished do. do.
 1 Spring for each size of escape
 valve.
 3 Assorted iron plates.
 6 " " bars.

REFRIGERATORS

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REFRIGERATORS.

6657

No. of Machines *One* Capacity of eachMakers *J. & E. Hall Ltd., Dartford, Kent.*Description *One no. 6 direct expansion vertical open type N.H₃ steam-driven @ 100 revs/min.*No. of Steam Cylinders, each Machine *1* No. of Compressors *1* No. of Cranks *2*Particulars of Pumps in connection with Refrigerating Plant and whether worked by Refrigerating Machines or Independently *Tests.**1 Steam cyl. tested to 350 lb/□" hyd.**1 Compressor 5½" dia. 6" stroke, tested to 700 lb/□" hyd. and 350 lb/□" air press.**1 set condenser coils to 350 lb/□" air.**23 expansion grids to 500 lb/□" " between 14th & 21st June, 1926.**System tested at 225 lb/□" air pressure, 31/8/26. Temperature trials concluded on 11/9/26.*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, ~~etc.~~ 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 *11/9/26.*

Spare Gear aboard; — Crankshaft complete, with ecc. sheaves: Cover complete with Suck. & delivery valves, for compressor: piston rod complete for eng: piston valve for same, with spindle: main bearing bush & studs: one top & one bottom end do:

RESULTS OF TRIALS.

COMPARTMENT.	Temp. at beginning of Trial.	Temp. at end of Trial.	Time required to obtain this Result.	Rise of Temp. after 24 hrs.
Butter room	22/23°F.	9/10°F.	8½ hrs.	12°F.

Extra gear supplied; — 2 brass-cased & 3 chamber thermometers, 5 flasks (50 lb. each) of N.H₃, and one set metallic packing for compressor gland.

(Continued from p. 32)

Articles of Spare Gear for Refrigerating Plant carried on board:— ecc. rod & trap: one of each pattern of ammonia valve, flange & fittings: do. do. pressure gauge: assorted lengths & bends of piping, with flanges, couplings, & screwing appliances: and assorted bolts, studs, nuts, packing, joint rings, & compressor rings.

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Engine by Sisson & Co. Ltd, Gloucester.
2549 enclosed, forced lub. 5" cyl. 3" stroke,
 100 lb/p, 650 r.p.m. Oil press. 20 lb/p.
 Underwent 4 hours ^{trial} Coupled to dynamo (see
 opposite), including 1/2 hr. overload, at
 Sisson's Works.

ELECTRIC LIGHTING.

Installation Fitted by *Telford, Grier & Mackay Ltd.*
 No. and Description of Dynamos *One 5 K.W. Comp.* **28458**
 Makers of Dynamos *J. P. Hall, Ltd. Oldham.*
 Capacity " *45.5* Amperes, at *110* Volts, *650* Revols. per Min.
 Current Alternating or Continuous *Continuous.*
 Single or Double Wire System *Double*
 Position of Dynamos *Engine-room, Starboard side.*
 " Main Switch Board " " " "
 No. of Circuits to which Switches are provided on Main Switch Board *4*

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	9	Various	7	7/036	1000	100%	600 meg.
Accommodation	37	30 watt #	20	"	2857	"	"
Crew	30	" "	11	"	1571	"	"
Engine Room	20	" "	6	"	857	"	"

Total No. of Lights *96* No. of Motors driving Fans, &c. No. of Heaters

Current required for Motors and Heaters *#9* Including 10 amps. for Shore lighting.

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

(none.)

Position of Switch Board	No. of Switches	Position of Switch Board	No. of Switches
On Main Switch Board	1	On Main Switch Board	1
On Aux. Switch Board	1	On Aux. Switch Board	1
On Engine Room	1	On Engine Room	1
On Boiler Room	1	On Boiler Room	1
On Saloons, State Rooms, &c.	1	On Saloons, State Rooms, &c.	1
On Deck Beams or Bulkheads	1	On Deck Beams or Bulkheads	1

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. $\frac{1}{8}$ S.W.G., Largest, No. $\frac{1}{8}$ S.W.G.

How are Conductors in Engine and Boiler Spaces protected? Lead-Covered & Armoured.

Saloons, State Rooms, &c., " ? Lead-Covered.

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp Lead-Covered & Armoured.

(2) " passing through Bunkers or Cargo Spaces Armoured.

(3) " Deck Beams or Bulkheads Reamed Holes.

Are all Joints in Cables properly soldered and thoroughly Insulated so that the efficiency of the Cables is unimpaired? No joints.

Are all Joints in accessible positions, none being made in Bunkers or Cargo Spaces?

Are all Hull Connections for Single-Wire Systems made with Screws of large Surface?

Are the Dynamos, Motors, Main and Branch Cables, so placed that the Compasses are not injuriously affected by them? Yes.

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

Has the Insulation Resistance over the whole system been tested? Yes.

What does the Resistance amount to? 7 meg Ohms.

Is the Installation supplied with a Voltmeter? Yes.

" " " an Ampere Meter? "

Date of Trial of complete Installation 22/9/26 Duration of Trial 6 hours.

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

Governor test 22/9/26

Full load, 28 amps. 110 volts.



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GENERAL CONSTRUCTION.

Have the Machinery and Boilers been constructed in accordance with the requirements of the Rules and the

Approved Plans? *yes.*

If not, give details of the points of difference, and state when these were sanctioned by the Chief

Surveyor. *Are the Dynamometer Main and Branch Cables as placed that the Compress are*

affected by them?

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

like the Installation 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 or complete Installation

Have all the requirements of Section 12 been satisfactorily complied with?

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.**

Whichever Cable is required in use

To work Lamp Circuit

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 fitted so as to be changed and easily accessible?

Insulated Cables, if required

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

as ascertained by me from personal examination

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

Fees—

MAIN BOILERS.

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

ENGINES.

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

It is submitted that this Report be approved.

Robert King
Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the 6th October 1926

Fees advised

Fees paid



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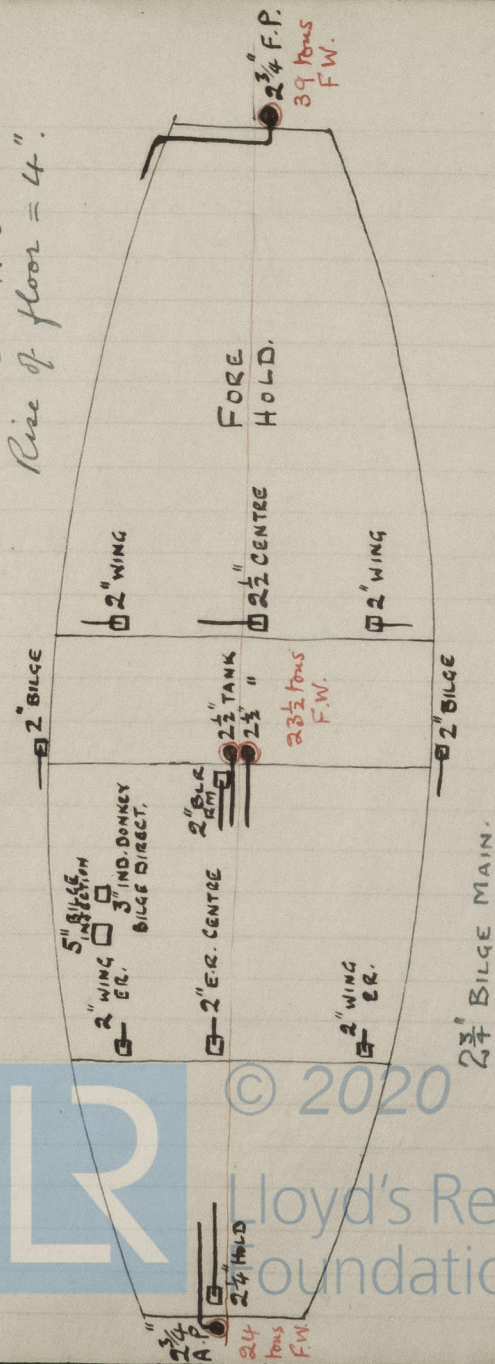
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10

1120025

 $L = 190$
$$B = 31$$
$$D = 12$$
$$l = 71.5$$

Rise of floor = 4".



— МАДЪ ШИМУР —

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