

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. 22/9/26 No. in Register Book 34

Received at Head Office

2nd October 1926

Surveyor's Report on the Deto 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

First 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.** } **Andrew & Cameron.**
M.P. }
2nd L.P. } **Slide.**

" 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.**

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

" Crosshead Gudgeons **3½"** Length of Bearing **5½"** Material **"**

No. of Crosshead Bolts (each) **2** Diar. over Thrd. **2"** Thrds. per inch **Steel.**

" Crank Pin " **2** " **1¾"** " **"**

" Main Bearings **6** Lengths **6¼"** " **"**

" Bolts in each **2** Diar. over Thread **1½"** Threads per inch **Steel.**

" Holding Down Bolts, each Engine **44** Diar. **1"** No. of Metal Checks

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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TURBO-ELECTRIC PROPELLING MACHINERY.

No. of Turbo-Generating Sets Capacity of each

Type of Turbines employed

Description of Generators

No. of Motors driving Propeller Shafting

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

Is Single or Double Reduction Gear employed?

Description of Motors

Diam. of 1st Reduction Pinion

" 1st " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

" 2nd " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Revs. per min. of Generators at Full Power

" Motors "

" " 1st Reduction Shaft

" " 2nd "

" " Propellers at Full Power

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial Knots. Propeller Revs. per min.

S.H.P.

Makers of Turbines

" Generators

" Motors

" Reduction Gear

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

DESCRIPTION OF INSTALLATION.



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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 3/4"

" of Crank Pins

6"

Length between Webs

6 3/4"

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. of 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 3/4"

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 5/8"

Length of After Bearings

11" forward
2-1 1/2" aft.

Of what Material are the After Bearings composed?

Lignum Vitae.

Are Means provided for lubricating the After Bearings with Oil?

Yes.

" " to prevent Sea Water entering the Stern Tubes?

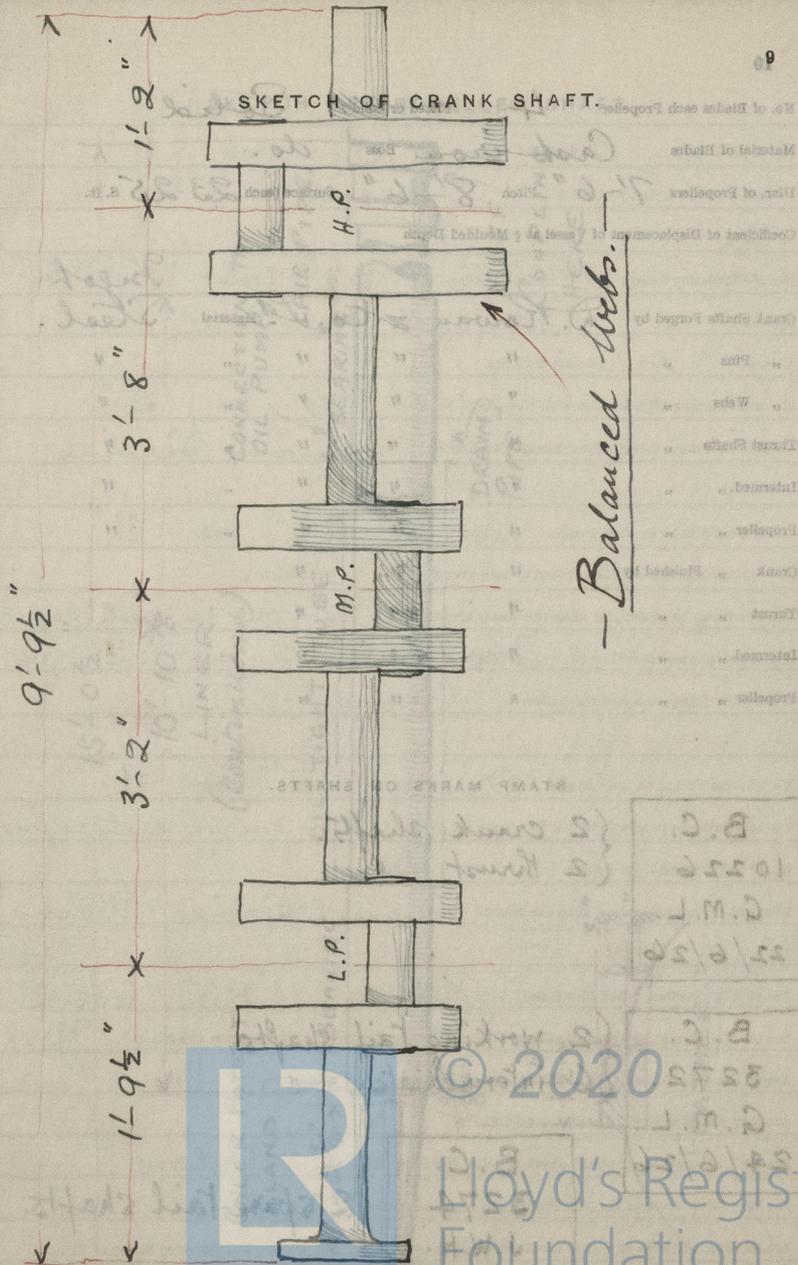
"

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.*

Diar. 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 "

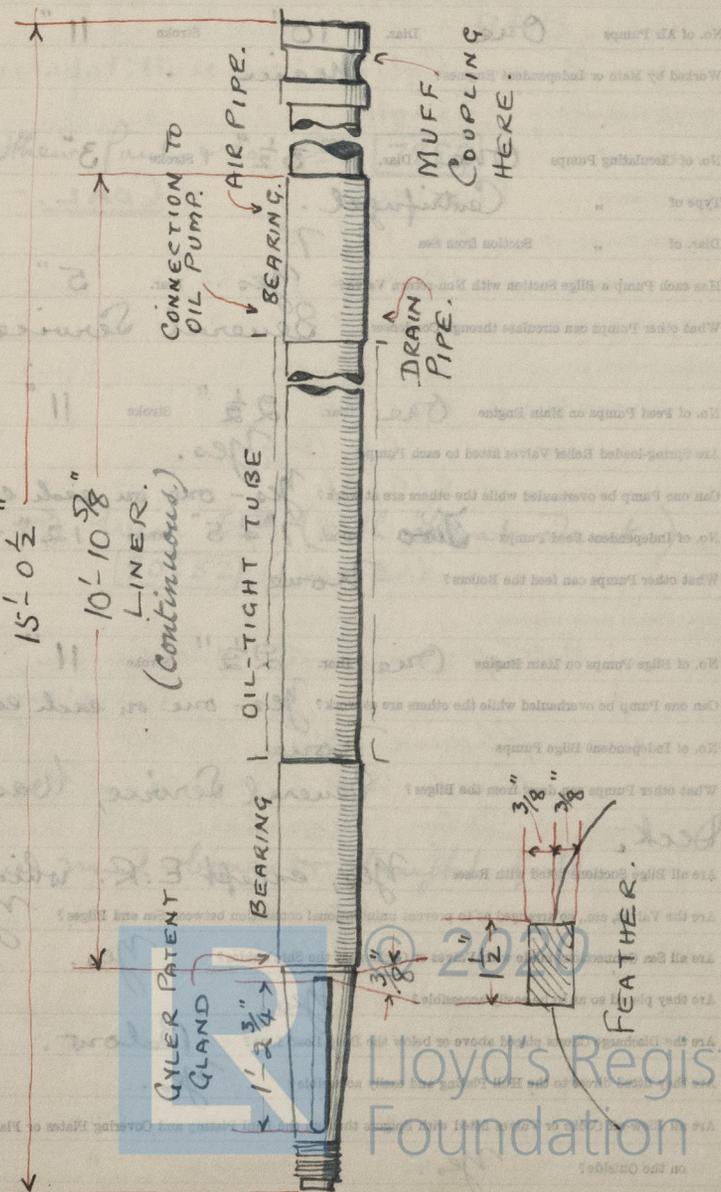
B.C.
3272.
G.M.L.
24/6/26

{ 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 *7"* Suction from Sea
 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.*

1. Ash Injector (P. & Proctor's patent)
2. Superheater (Single)
 Matthew Paul & Co. Ltd. 7889

3. V. J. Weir Ltd. (with "Float Tank")
80852 (1 and 2.)



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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"**

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"**

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

Maximum Pressure under Accumulation Test **192 lb/sq"**

System of Draught **Natural.**

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

Makers of Plates **Gutehoffnungshutte, 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** No. of Water Gauges **One.**

„ Test Cocks „ **2** „ Salinometer Cocks **11**

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

2 **Temperature Balances (Brundrit)**

Rings; - **Port Boiler.** **Starboard Boiler.**
 P. $\frac{1}{4}$ " S. $\frac{3}{8}$ " P. $\frac{7}{8}$ " S. $\frac{7}{8}$ "

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



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Thickness of End Plates in Steam Space Approved 1" *Pillars*

" " " " " in Boilers " *Struts*

Pitch of Steam Space Stays 1'-4" x 1'-3³/₄"

Diar. " " " " Approved 2¹/₂" Threads per Inch 6 *and plates*

" " " " " 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 " " " " 13¹/₈" x 8³/₄"

Diar. of Stays Approved 1³/₄" 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.]

Thickness of End Plates in Steam Space Approved 3/4" *Steel*

" " " " " in Boilers " "

Pitch of Steam Space Stays 1'-1¹/₈" x 8³/₄"

Diar. " " " " Approved [none.]

" " " " " in Boilers " "

Material of " " " Steel

How are Stays Secured? Alternate stay tubes

Diar. and Thickness of Loose Washers on End Plates [none.]

" " Riveted " " " " "

Width " " Doubling Strips " "

Thickness of Middle Back End Plates Approved 5/8"

" " " " " in Boilers "

Thickness of Doublings in Wide Spaces between Fireboxes 11/4" x 8³/₄"

Pitch of Stays at " " " " 11/4" x 8³/₄"

Diar. of Stays Approved 11/4" Threads per Inch 11

" " " in Boilers 11/4" x 8³/₄"

Material " Steel

Are Stays fitted with Nuts outside? Yes

Thickness of Back End Plates at Bottom Approved 5/8"

" " " " " in Boilers "

Pitch of Stays at Wide Spaces between Fireboxes 11/4" x 8³/₄"

Thickness of Doublings in " " [none.]

Thickness of Front End Plates at Bottom Approved 11/4"

" " " " " in Boilers "

No. of Longitudinal Stays in Spaces between Furnaces 11

[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 $1'-1\frac{7}{8}" \times 8\frac{3}{4}"$
 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 corner.)
 " 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 O.C. Tops $10\frac{1}{8}" \times 9"$

Diar. of Screwed Stays Approved $1\frac{1}{4}"$ Threads per Inch
 " " in Boilers "
 Material " Steel
 Thickness of Combustion Chamber Tops Approved $\frac{11}{16}"$
 " " " in Boilers "
 Pitch of Screwed Stays in O.C. Stays $10\frac{1}{8}" \times 9"$
 Diar. of Stays Approved $1\frac{1}{4}"$ Threads per Inch
 " " in Boilers "
 Material " Steel
 Thickness of Combustion Chamber Backs Approved $\frac{11}{16}"$
 " " " in Boilers "
 Pitch of Screwed Stays in O.C. Backs $10\frac{1}{8}" \times 9"$
 Diar. of Stays Approved $1\frac{1}{4}"$ Threads per Inch
 " " in Boilers "
 Material " Steel
 Are all Screwed Stays fitted with Nuts inside O.C.?
 Thickness of Combustion Chamber Bottoms $\frac{11}{16}"$
 No. of Girders over each firing chamber
 Depth and Thickness of Girders
 Material of Girders
 No. of Girders in Bottom
 Size of Lower Flange



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Diar. 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.C. Sides $10\frac{1}{8}" \times 9"$
 Diar. " " Approved $1\frac{3}{4}"$ Threads per Inch 9
 " " " in Boilers "
 Material " " Steel. *Alternate stay tubes.*

Thickness of Combustion Chamber Backs Approved $\frac{21}{32}"$
 " " " " in Boilers "

Pitch of Screwed Stays in C.O. Backs $9\frac{1}{2}" \times 8\frac{3}{4}"$
 Diar. " " 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

Type
 No. of Boilers
 Greatest Lat. 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 Crown
 Height of Ribbox Crown above Fire Grate
 Are Ribbox Crowns Flat or Dished?
 Internal Radius of Dished Crowns
 Thickness of Plates
 No. of Crown Ribs
 Diar.
 Material
 Internal Diar. of Ribbox at Top
 Thickness of Plates
 Bottom
 No. of Water Tubes
 Lat. Diar.
 Material of Water Tubes
 Size of Manhole in Rib
 Direction of Compensating Ring
 Heating Surface, each Boiler
 Grate Surface

SUPERHEATERS

Description of Superheaters
 [None.]
 Were fitted?



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VERTICAL DONKEY BOILERS.

No. of Boilers Type
 Greatest Int. Diar. Height
 Height of Boiler Crown above Fire Gate
 Are Boiler Crowns Flat or Dished? [None.]
 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 Gate
 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 Pipes secured?
 Date of Hydraulic Test
 Test Pressure
 No. of Pipes
 Material
 Braced, Welded or Riveted
 Internal Diar.
 Thickness
 How are Pipes 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 Diar. | 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. | | |
| No. of Lengths | | | |
| Material | | | |
| Brazed, Welded or Seamless | | | |
| Internal Diar. | | | |
| Thickness | | | |
| How are Flanges secured? | | | |
| Date of Hydraulic Test | | | |
| Test Pressure | | | |
| No. of Lengths | | | |
| Material | | | |
| Brazed, Welded or Seamless | | | |
| Internal Diar. | | | |
| Thickness | | | |
| How are Flanges secured? | | | |
| Date of Hydraulic Test | | | |
| Test Pressure | | | |

| | | | |
|----------------------------|-----------------------------------|--|--|
| No. of Lengths | 1 | | |
| Material | Steel | | |
| Brazed, Welded or Seamless | Seamless | | |
| Internal Diar. | 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. | | |
| No. of Lengths | | | |
| Material | | | |
| Brazed, Welded or Seamless | | | |
| Internal Diar. | | | |
| Thickness | | | |
| How are Flanges secured? | | | |
| Date of Hydraulic Test | | | |
| Test Pressure | | | |
| No. of Lengths | | | |
| Material | | | |
| Brazed, Welded or Seamless | | | |
| Internal Diar. | | | |
| Thickness | | | |
| How are Flanges secured? | | | |
| Date of Hydraulic Test | | | |
| Test Pressure | | | |



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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 Shell 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. 1



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SPARE GEAR

| | | | | | |
|-----------------------|-------|------------------------|---------------|-----------------------------|------------------|
| No. of Top End Bolts. | 2 | No. of Bot. End Bolts. | 2 | No. of Cylinder Cover Studs | 6 |
| " Coupling Bolts | 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 Valves | |
| " 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

[Faint, mostly illegible handwritten notes and tables, possibly related to refrigerators, are visible on this page. Some legible fragments include:]

Quantity of each
No. of Machines
Description
No. of Steam Cylinders and Valves
No. of Compressors
No. of Crank
No. of Pistons
No. of Rods
No. of Bushes
No. of Bearings
No. of Gaskets
No. of Washers
No. of Nuts
No. of Bolts
No. of Screws
No. of Rivets
No. of Pins
No. of Cotter Pins
No. of Washers
No. of Nuts
No. of Bolts
No. of Screws
No. of Rivets
No. of Pins
No. of Cotter Pins

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

Sects.

*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 ~~Brine and other~~ Regulating Valves placed so as to be accessible without entering the Insulated

Spaces?

*Yes.*Are all Pipes, ~~etc. 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 Suct. & 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. |
|--------------------|------------------------------|------------------------|--------------------------------------|-----------------------------|
| <i>Butter room</i> | <i>22/23°F.</i> | <i>9/10°F.</i> | <i>8 1/4 hrs.</i> | <i>12° F.</i> |

*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/o, 650 r.p.m. Oil press. 20 lb/o.
 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)

| Location of Switch Board | No. of Switches |
|--------------------------|-----------------|
| Main Switch Board | |
| Engine Room | |
| Boiler Room | |
| Deck | |
| Saloon | |
| State Room | |
| Other | |

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. $\frac{1}{18}$ 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 so placed that the Compressors are

affected by them?

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

eliminated?

Has the Installation Resistance over the whole system been tested?

What does the Resistance amount to?

Is the Installation supplied with a Voltmeter?

as an Ampere Meter?

Date of Trial of complete Installation *22/10/22*

Duration of Trial *2 1/2 hours*

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

Whichever Cable is required in use *yes.*

Do each Lamp Circuit *yes.*

Are the Materials used in the Construction of Engines and Boilers, so far as could be seen, sound and

trustworthy? *yes. yes.*

Is the Workmanship throughout thoroughly satisfactory? *yes.*

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

as ascertained by *T.S.* from personal examination

me

Lead Covered

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

Fees—

MAIN BOILERS.

H.S. Sq. ft. £ s. d. :

G.S. " " : :

DONKEY BOILERS.

H.S. Sq. ft. £ s. d. :

G.S. " " : :

£ : :

ENGINES.

L.P.C. Cub. ft. £ s. d. :

£ : :

Testing, &c. : :

£ : :

Expenses : :

Total ... £ : :

It is submitted that this Report be approved,

John 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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 Secretary.



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