

No. 527

Bk IV. p. 184

15/287

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 524 No. in Register Book 1046

S.S. "Annan"

Makers of Engines Dunsmuir & Jackson Ltd

Works No. 313

Makers of Main Boilers Dunsmuir & Jackson Ltd

Works No. 313

Makers of Donkey Boiler Dunsmuir & Jackson Ltd

Works No. 313

MACHINERY.



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002485-002489-0081

No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 524 No. in Register Book 1046

Received at Head Office

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the *S/S 'Annan'*

Port of Registry

Glasgow

Registered Owners

Wm Sloan & Co

Surveyor's District

Glasgow

Date of Completion of Engines

23rd March 1907

" " " " Main Boilers

do

" " " " Donkey "

do

*Reconditioned &
altered, 1932.*

Trial Run at

Skelmorlie

Date *23rd Mar 1907*

First Visit

29th May 1906
22/2/32.

Last Visit

2nd Apr 1907

Total Number of Visits

44

(1932 trial figures on p. 39.)

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ENGINES

Made by	Dunsmuir & Jackson Ltd		
" at	Govan Eng Works		
Description	Triple expansion		
No. of Cylinders, each Engine	3	Diars.	22'4" 35'59" Stroke 42"
Cub. feet in each L.P. Cylr.	66.4	Revs. per Min.	90 L.H.P. 1800
Pressure in L.P. Receiver at full Power	75	2nd L.P.	L.P. 16
Thickness of Metal in H. P. Cylr.	1 3/8	I.P.	1 1/8
" " " " Liner	1 3/8	"	1 1/4
" " " " Valve Chest	1 3/8	"	1 1/4
Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr.?	yes		
" " " each Receiver?	yes		
Number of Bolts in H.P. Cylr. Cover	24	I.P.	24 2nd I.P. ✓ L.P. 30
Eff. Diar.	1.06	"	1.06
Pitch	4"	"	5 5/8" 7"
Type of H.P. Valves (Piston or Slide)	Piston Slide		
" Valve Gear	Stephenson link		
Diameter of Piston Rods (plain part)	6"	At Bottom of Thread	4.29
Makers	Dunsmuir & Jackson Ltd	Material	Iron
Diameter of Connecting Rods (smallest part)	6 3/8"	Material	Iron
Makers	Dunsmuir & Jackson Ltd	Material	Steel
Diar. of Crosshead Gudgeons	5 3/4"	Length of Bearing	2 @ 6 1/8"
No. of Top End Bolts (each Rod)	4	Effective Diar.	2.18" Material Iron
" Bot. " "	2	"	3.1" Material Iron
" Main Bearings	6	Lengths	15 7/8" Material Iron
" Bolts in each	2	Effective Diar.	2.39" Material Iron

No. of Holding Down Bolts, each Engine *113* No. of Metal Chocks *113*
 Eff. Diar. " " " *1' 06"* Average Pitch *14"*
 Are the Engines bolted directly to the Tank Top? *yes*
 Are the Bolts tapped through the Tank Top and fitted with Nuts inside? *yes*
 Date of Test of Tank by Water Pressure with Holding Down Bolts in place *22/3/7*

ALTERATIONS BY ALEX. STEPHEN & SONS, LTD., 1932

SKETCHES

* New cylinders 16½", 26½" & 46" stroke 42"
L.P. = 40.39 cub. feet.
H.P. & M.P. fitted with Andrews & Cameron's patent
inlet & exhaust valves; L.P. fitted with inlet
valves only and [†] exhaust through central belt
on uniflow system; but provision made for
fitting exhaust valves if desired.

New M.P. & L.P. back columns on new piece of
roleplate; ~~to carry~~ new welded steel cylindrical
condenser having an independent circulating
pump made by Drysdale & Co. Ltd. (see p. 13.)

* (new pistons and new L.P. piston rod.)

† Welded steel receivers between (1) H.P. & M.P. cyls.
and (2) between M.P. & L.P. cyls. The inlet and
exhaust valves are carried in these. (see p. 9.)

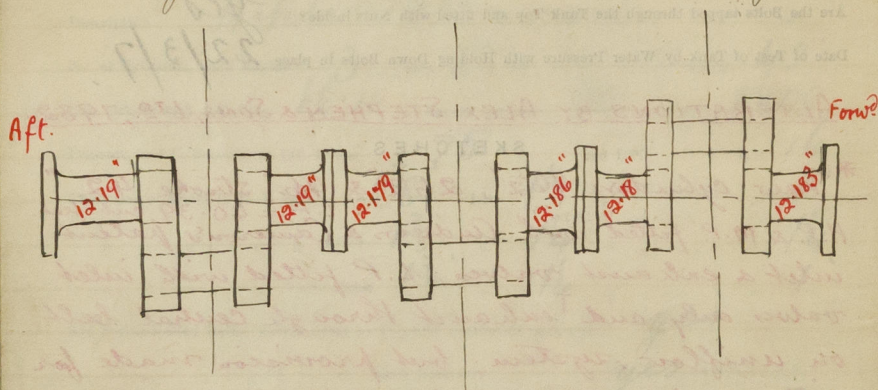
† L.P. cyl. has ring of 20 exhaust ports 4" deep at mid-
length. Two cast steel pistons with distance piece
and compression washers between. Total depth at
cyl. walls 2'-9¾".

† Cast iron H.P. receiver with A. & C. inlet valves.
New cast steel engine stop valve. New starting valve.

* Existing H.P. and M.P. piston rods turned down to 5½" dia.
new L.P. rod 5½" dia. (continued over leaf.)

SKETCHES.

Lengths of crank shaft interchangeable



Skimmed Apr. 1932 — 6 diameters shown in red.

Eccentrics reset on shaft, & straps adjusted.

SHAFTING.

Are Crank Shafts Built? *yes* No. of Lengths in each *3* ^{Interchangeable} Angle of Cranks *120°*
Diar. of Crank Shafts by Rule *11.21* Actual *12 1/4"* Diar. in Way of Webs *12 1/2"*
Makers of " *J Purden & Sons* Material *Iron*
Diar. of Crank Pins *12 1/4"* Diar. in Way of Web *12 1/4"*
Makers of " *Dunsmuir & Jackson Ltd* Material *Iron*
Width across Crank Webs at Centre of Shaft *24"* Thickness *8"*
" " " " Crank Pins *24"* *8"*
" " " " Narrowest part *24"* *8"*
Makers of Crank Webs *Dunsmuir & Jackson Ltd* Material *Iron*
Diar. or Breadth of Keys in Crank Webs *2* Length *5 1/2"*
" of Dowel Pins in Crank Pins *1 3/8"* Length *5 1/2"* Screwed or Plain *plain*
No. of Bolts in each Coupling *6* Diar. at Mid Length *3 3/2* Diar. of Pitch Circle *19*
Material of Coupling Bolts *Steel*
Crank Shafts Finished by *Dunsmuir & Jackson Ltd*
Greatest Distance from edge of Main Bearing to Crank Web *5 1/6"*
Description of Thrust Blocks *Horse shoe type*
Number " " Rings *5*

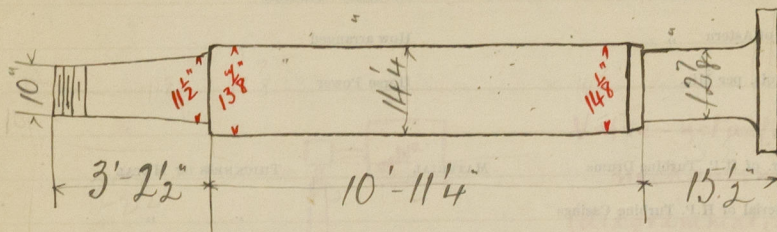
Diar. of Thrust Shafts by Rule *11.21* Actual (at bot. of Collars) *12 1/4"* Over Collars *20"*
" " at Forward Coupling *12 1/4"* After Coupling *12 1/4"*
No. of Thrust Collars *5* Thickness *2"* Distance apart *3 3/4"*
Thrust Shafts Forged by *Donnytown Forge Co.* Material *Steel*
" Finished by *Dunsmuir & Jackson Ltd*

Diar. of Intermediate Shafting by Rule *10.65* Actual *11 5/8"*
No. of Lengths, each Engine *4* No. of Tunnel Bearings *4*
Diar. of Bearings *11 3/4"* Length *18"* Distance apart *10'-9"*

No. of Bolts, each Coupling *6* Diam. at Mid Length *3"* Diam. of Pitch Circle *19"*
 Intermediate Shafts Forged by *Dennystown Forge Co* Material *Iron*
 " " Finished by *Dunsmuir & Jackson Ltd.*
 Diam. of Propeller Shafts by Rule *11.59"* Actual *12 $\frac{3}{4}$ "* At Couplings *12 $\frac{7}{8}$ "*
 Are Propeller Shafts fitted with Continuous Brass Liners? *yes*
 Diam. over Liners *14 $\frac{1}{4}$ "* Length of After Bearings *4'-6"*
 Of what Material are the After Bearings composed? *Lignum Vitae*
 Distance from After Bearing in Stern Tube to nearest Tunnel Bearing *13'-6"*
 Are the After Bearings lubricated with Oil or Sea Water? *Sea water*
 What means are adopted to prevent Sea Water entering the Stern Tubes? *none*
 Propeller Shafts Forged by *Dennystown Forge Co* Material *Iron*
 " " Finished by *Dunsmuir & Jackson Ltd.*
 No. of Propellers *one* Diam. *13'-0"* Pitch *17'-6"*
 " Blades, each Propeller *4* Fitted or Solid *fitted*
 Material of Blades *Cast Steel* Boss *cast Iron*
 Surface, each Propeller *64 $\frac{1}{2}$ ft²* Diam. of Propeller Rule Diam. of Crank Shaft = *13.9*
 Coefficient of Displacement of Vessel at $\frac{1}{2}$ Moulded Depth *.65*

*One solid 4 bladed bronze propeller 13'-0" dia.
 15'-3" pitch (about 3 $\frac{1}{2}$ tons) made by Bull's
 Metal + Melloid Coy. Ltd. of Yoker, 3/32.
 (Report dated 14th March, 1932.)
 Surface = 54.75 ft².*

SKETCHES.



*Skimmed liner & turned down cone, Apr. 1932 - to
 diameters shown in red.*



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TURBINE ENGINES.

Type

None

No. of H.P. Turbines

No. of L.P. Turbines

No. of Astern

How arranged

Revs. per Min.

Horse Power

Diar. of H.P. Turbine Drums

MATERIAL

THICKNESS OF METAL

Material of H.P. Turbine Casings

Lengths of Blades in H.P. Turbines

No. of Rows of Blades of each Length

Pitch of

Diar. of L.P. Turbine Drums

MATERIAL

THICKNESS OF METAL

Material of L.P. Turbine Casings

Lengths of Blades in L.P. Turbines

No. of Rows of Blades of each Length

Pitch of

Diar. of Astern Turbine Drums

MATERIAL

THICKNESS OF METAL

Material of Astern Turbine Casings

Lengths of Blades in Astern Turbines

No. of Rows of Blades of each Length

Pitch of

Diar. of Turbine Spindles

Length of Bearing

No. of Thrust Collars on each Spindle

Thickness

Distance apart

Diar. of Spindles at Bottom of Collars

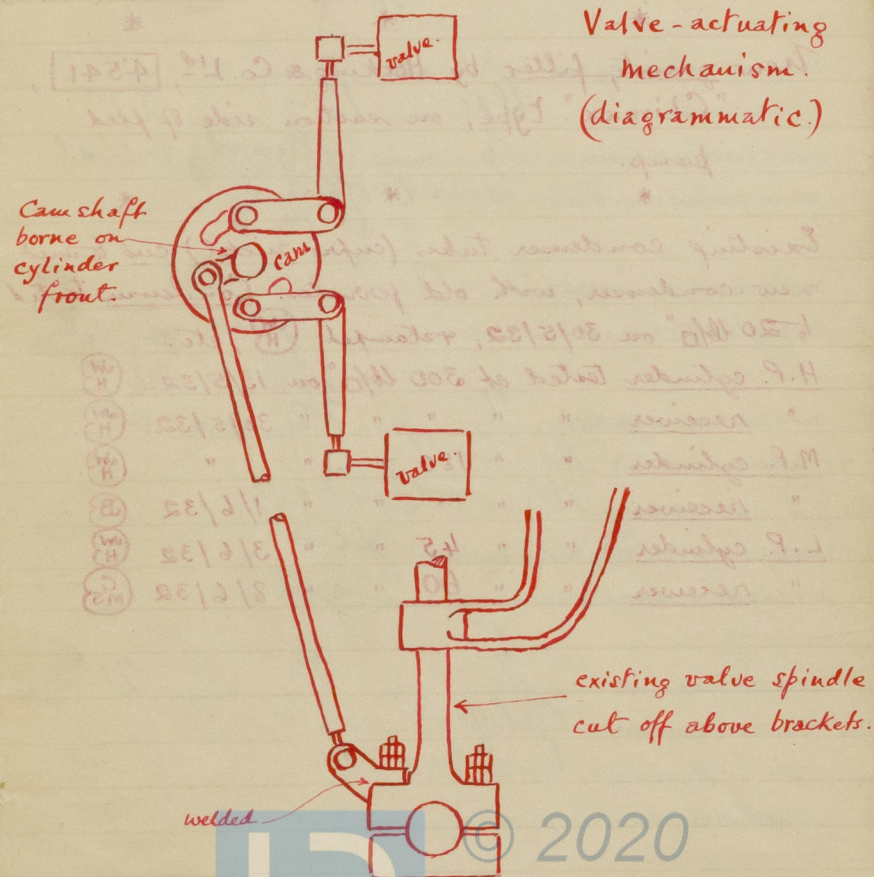
Diar. over Collars

Spindles Forged by

Material

" Finished by

SKETCHES.



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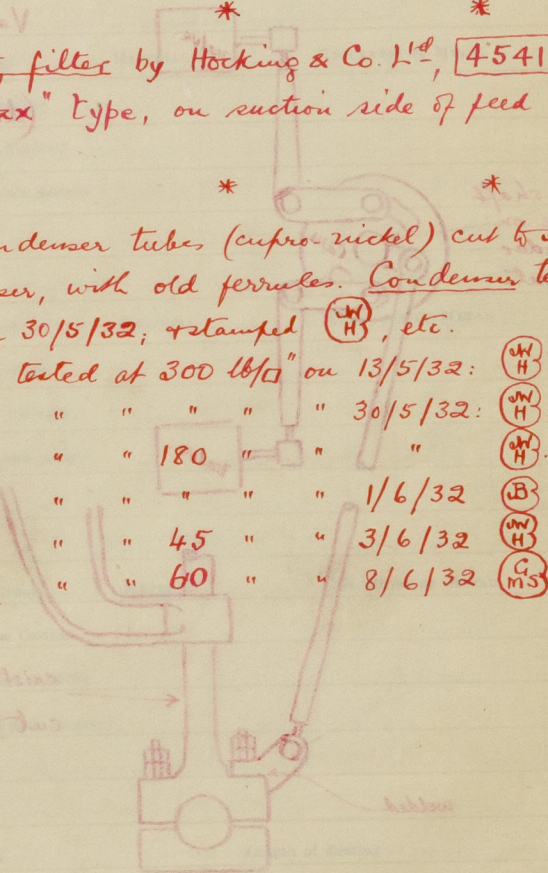
SKETCHES.

~~New gravity filter made by A. Stephen & Son Ltd.~~
New exhaust surface feed water heater (60 ft.)
 by Andrews & Cameron Ltd. 4316
 Shell tested to 50 lb/□ " & tubes to 480 lb/□ (29/3/32)

* * *
 New gravity filter by Hocking & Co. Ltd., 4541,
 "Climax" type, on suction side of feed
 pump.

* * *
 Existing condenser tubes (cupro-nickel) cut to suit
 new condenser, with old ferrules. Condenser tested
 to 20 lb/□ on 30/5/32; & stamped JW, etc.

H.P. cylinder	tested at 300 lb/□ on 13/5/32:	JW
" receiver	" " " " " 30/5/32:	JW
M.P. cylinder	" " 180 " " "	JW
" receiver	" " " " " 1/6/32	JB
L.P. cylinder	" " 45 " " 3/6/32	JW
" receiver	" " 60 " " 8/6/32	GMS



SKETCHES.

[Faint, mostly illegible handwritten notes and sketches are visible on this page. Some legible fragments include:]
 No. of Air Pumps
 Type of
 Dis. of Air Pump Rod
 How are Air Pumps Worked
 No. of Centrifugal Circulating Pumps
 How are Centrifugal Pumps Worked
 Dis. of Centrifugal Pump Rods
 How are Centrifugal Pumps Worked
 Dis. of Centrifugal Pump section from sea
 Has each circulating pump a high section with non-return valve?
 No. of feed pumps on each engine
 How do they pump from?
 How do they pump from?
 Are spring-loaded Relief Valves fitted to each pump?
 Can one pump be overhauled while the others are at work?
 No. of High Pumps on each engine
 How do they pump from?
 Discharge to
 Can one pump be overhauled while the others are at work?
 No. of High Pumps connected to Condensers
 How are they connected?
 How are they connected?
 How are they connected?



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PUMPS, ETC

No. of Air Pumps *1* Diameter *20"* Stroke *21"*
Type of " *Edwards*
Diameter of Air Pump Rod *3"* Material *Muntz metal*
How are Air Pumps Worked? *Lever off MP*

No. of Centrifugal Circulating Pumps	✓	Maker	
" Reciprocating " "	One	Diar.	12 1/2 Stroke 21"
Diar. of Circulating Pump Rods	3'	Material	muntz metal
How are Circulating Pumps Worked?	Lever off L.V.		

Diap. of Circulating Pump Suction from Sea	7"	
Has each Circulating Pump a Bilge Suction with Non-return Valve?	yes	Diap. 5"

No. of Feed Pumps on each Engine	Diar.	Stroke
2	3 1/2	21
Where do they pump from?	Hotwell	
" " discharge to?	Filter & Boilers	
Are Spring-loaded Relief Valves fitted to each Pump?	yes	
Can one Pump be overhauled while the others are at work?	yes	

No. of Bilge Pumps on each Engine	2	Dia.	3 1/2'	Stroke	21"
Where do they pump from?	Bilges Overboard.				
" " discharge to?					
Can one Pump be overhauled while the others are at work?	yes				

No. of Bilge Injections connected to Condensers *None* Diar. ✓

Are all Bilge Suctions fitted with Roses?

Are the Valves, Cocks, and Pipes so arranged as to prevent unintentional connection between Sea and Bilges? *yes*

Are all Sea Connections made with Valves or Cocks fitted direct to the Hull Plating? *yes*

* Are they placed so as to be easily seen and accessible? *yes*

Are the Discharge Chests placed above the Deep Load Line?

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

Are all Blow-off Cocks or Valves fitted with Spigots through the Hull Plating and Covering Plates or Flanges on the outside? *yes. not used*

One independent centrifugal circulating pump by
Dresser & Co. Ltd. ("Thermal" type) 7" bore

No. 24278

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Main BOILERS.

Boilers made by *Dunsmuir & Jackson Ltd*
 " at *Govan Engine Works*
 Works No. *313*
 Date when Plan approved *29th May 1906*
 Boiler Plates, Iron or Steel *Steel*
 Makers of Shell Plates *Glasgow Iron & Steel Co Ltd*
 " Internal Plates *do.*
 " Furnaces *Deighton Patent Furnace Ltd*
 " Stay Bars *David Colvill & Sons Ltd*
 " Rivets *The Rivet Bolt & Nut Co Ltd*
 Material tested by (B.C., B.T., etc.) *BC & BT*
 No. of Boilers *Two*
 Single or Double-ended *single end*
 No. of Furnaces, each Boiler *3*
 Type of Furnaces *Deighton*
 Approved Working Pressure *165 lbs*
 Hydraulic Test Pressure *330 "*
 Date of Hydraulic Test *12th Feb 1907*
 " when Safety Valves set *1st March 1907*
 Pressure on Valves *167 lbs*
 Date of Steam Accumulation Test *23rd March 1907*
 Max. Pressure under Accumulation Test *180 lbs*
 System of Draught *Natural*
 Can Boilers be worked separately? *yes*
 Greatest inside Diam. of Boilers *14' 3"*
 " " Length " *11' 6"*
 Square Feet of Heating Surface, each Boiler *2252 $\frac{1}{2}$*
 " Grate " " *65 $\frac{1}{2}$*

Donkey Boiler

Dunsmuir & Jackson Ltd MAIN BOILERS.
Govan *Alex. Stephen & Sons Ltd.*

313

11th June 1906

Steel

Steel Co. of Scotland Ltd

Deighton Patent Furnace Co. Ltd *Brownside Blk. Works Co. Ltd.*
David Colvill & Sons Ltd *Steel Coy. of Scotland.*

The Rivet Bolt & Nut Co Ltd

BC & BT

one

single end

one

Deighton

88 lbs

160 "

7th Feb 1907

8th March 1907

80 lbs

None

31/8/32.

206 16/0"

Natural.

8' 0"

8' 0"

439 $\frac{1}{2}$ 21.5 $\frac{1}{2}$

B.C. TEST.
 5477
 350 L.B.
 W.P. 200 L.B.
 R.L.C.
 28/4/32.

Two (2)

Single.

2

Deighton

200 16/0"

350 "

28/4/32.

31/8/32.

206 16/0"

fan 130/9078 engine 200/1132

Howden's F.D., c.a.

Yes.

12' 6"

11' 6"

1518

35

Air pre-heater in uptake



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No. of Safety Valves, each Boiler

Diar. " " "

Area " " "

Are the Valves fitted with Easing Gear?

No. of Pressure Gauges, each Boiler

" Water " "

" Test Cocks, "

" Salinometer Cocks, "

Are Water Gauge Pillars attached by Pipes to Steam and Water Spaces?

Are these Pipes connected to Boilers by Cocks or Valves?

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

No. of Strakes of Shell Plating in each Boiler

" Plates in each Strake

Thickness of Shell Plates by Rule

" " Approved

" " in Boilers

Are the Rivet Holes Punched or Drilled?

Are Rivets Iron or Steel?

Are the Longitudinal Seams Butt or Lap Joints?

Are the Double Butt Straps of equal width?

Thickness of outside Butt Straps

" inside "

Are Longitudinal Seams Hand or Machine Riveted?

Are they Single, Double, or Treble Riveted?

Diar. of Rivet Holes

Pitch "

Width of Overlap

Percentage of Strength in Longitudinal Seams

Main
Two

3"

14.2 sq"

yes

one

one

3

one

one

yes

Cocks

Valves

one

2

2

17.35

1/4"

1/4"

1/4"

1/4"

Drilled

Steel

Butt

yes

1"

1"

1"

Machine

Treble

1/4"

8'8"

18'8" butt strap

84.6% Plate 89.9% Rivet

84.6% Plate 89.9% Rivet

Donkey
Two

2 1/2"

9.8 sq"

yes

one

one

3

one

yes

Cocks

Valves

one

2

6.82

1/2"

1/2"

1/2"

Drilled

Steel

Lap

✓

✓

✓

Machine

Double

7/8"

27.8"

4 3/16"

69.6% Plate 71% Rivet

69.6% Plate 71% Rivet

69.6% Plate 71% Rivet

69.6% Plate 71% Rivet

69.6% Plate 71% Rivet

69.6% Plate 71% Rivet

69.6% Plate 71% Rivet

69.6% Plate 71% Rivet

69.6% Plate 71% Rivet

69.6% Plate 71% Rivet

each Superheater, one single

1 1/2"

Superheater safety valves

set 31/8/32 at 204 lb/sq"

Fitted with easing gear.

Area 1.467 sq"

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

end Boiler

One pair

2 1/8"

4.093 sq"

Yes

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

One

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Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at

Eff. Diar. of Stays by Rule

" " " Approved

" " " in Boilers

Material

Are Stays fitted with Nuts outside?

Thickness of Back End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

Pitch of Stays at Wide Spaces between Fireboxes

Thickness of Doublings in

Thickness of Front End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

No. of Long. Stays in Spaces between Furnaces

Eff. Diar. of Stays by Rule

" " " " " Approved

" " " " " in Boilers

Material of

Thickness of Front Tube Plates by Rule

" " " " " Approved

" " " " " in Boilers

Pitch of Stay Tubes at Spaces between Stacks of Tubes

Thickness of Doublings in

" Stay Tubes at

Main

None

13'2" x 8'4"

1.53

1.71

1.71

Steel

yes

12.8

16

13

16

13

16

20'8" x 10"



none

11.9

16

13

16

13

16

3

2.06

2.1

2.1

Steel

15.9

16

1"

1"

14'2" x 9'4"

none

7'6" x 3'8"

Donkey.

✓

one firebox

✓

✓

✓

✓

✓

Iron

yes

9.3

16

5"

8"

5"

8"

✓

✓

10.5

16

10.5

16

✓

✓

✓

✓

✓

✓

✓

9.6

16

10.5

16

10.5

16

✓

✓

✓

✓

Below tubes, 5/8"

~~Stay tubes~~ 1'-2 1/4" x 8"

2"

"

Steel.

Yes.

27"

32"

29"

32"

Chamber bottom 1'-10 3/4" radius inside.

At bottom only, 5/8"

29"

32"

15"

16"

One above

One below

2 7/8"

"

Steel.

(One 2 1/4" steel breast stay each side.)

29"

32"

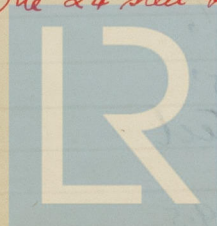
15"

16"

1'-2 1/4" x 8"

none.

3/8"



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Are Stay Tubes fitted with Nuts at Front End?

Main

No

Thickness of Back Tube Plates by Rule

13.2
16

" " " Approved

13.5
16

" " " in Boilers

13.5
16

Pitch of Stay Tubes in Back Tube Plates

14 1/4" x 9 1/4"

" Plain "

4 1/4" x 4 5/8"

Thickness of Stay Tubes

5 1/6"

" Plain "

No 8 W.G.

External Diar. of Tubes

3 1/2"

Material " "

Iron

Thickness of Furnace Plates by Rule

8.12
16

" " " Approved

8.5
16

" " " in Boilers

8.5
16

Smallest outside Diar. of Furnaces

4 3/16"

Length between Tube Plates

7' 6"

Width of Combustion Chambers (Front to Back)

3'-0"

Thickness of " " " Tops, by Rule,

9.5
16

" " " " Approved

9.5
16

" " " " in Boilers

9.5
16

Pitch of Screwed Stays in C.C. Tops

8 3/4" x 8 1/4"

Eff. Diar. " " by Rule

1.37"

" " " Approved

1.5"

" " " in Boilers

1.5"

Material " "

Steel

Thickness of Combustion Chamber Sides by Rule

9.5

Donkey

No

8.6
16

5 1/8"

5 1/8"

12 3/4" x 8 1/4"

4'8" x 4'8"

5 1/6"

9 W.G.

3"

Iron

4.96
16

7 1/6"

7 1/6"

4 2/8"

5' 6"

20 7/8"

7.45
16

7 5/6"

7 5/6"

9 1/4" x 9 1/4"

1.15

1.25

1.25

Iron

6.83
16

Yes

25 1/32"

13 1/16"

1'-0" x 8"

4" x 4"

3/8" wide space marginal; 5/16" others.

9 W.G.

2 3/4"

Lapwelded iron.

19 1/32"

3'-7 3/8"

7'-8"

2'-9 1/16" inside at top.

31 1/32"

1 1/6"

3 @ 8" x 9" between girders.

© 2020 1 3/4"

"

Steel

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Thickness of Combustion Chamber Sides Approved

" " " " in Boilers

Pitch of Screwed Stays in C.C. Sides

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

Thickness of Combustion Chamber Backs by Rule

" " " Approved

" " " in Boilers

Pitch of Screwed Stays in C.C. Backs

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

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

Thickness of Combustion Chamber Bottoms

No. of Girders over each Wing Chamber

" " " Centre "

Depth and Thickness of Girders

Material of Girders

No. of Stays in each

No. of Stay Tubes, each Boiler

" " Plain " " "

Size of lower Manholes

Main

9.5

16

9.5

16

8 3/4" x 8 1/4"

1.37

1.5

1.5

Steel

9.5

16

9.5

16

8 3/4" x 8 1/4"

1.37

1.5

1.5

Steel

yes

13/16

5

4

8 1/2" x 7 1/8"

Iron

3

71

194

15" x 11"

Donkey

7.5

16

7.5

16

8 3/4" x 9 1/4"

1.15

1.25

1.25

Iron

7.45

16

7.5

16

7.5

16

9 1/4" x 9 1/4"

1.15

1.25

1.25

Iron

yes

7 1/6

✓

7

4 1/2" x 3 1/4"

Iron

one

18

60

2 @ 8" x 5"

VERTICAL DONKEY BOILERS

21"

32"

16"

8 1/2" x 8 1/2"

1 3/4"

"

Steel

21"

32"

16" (full)

9" x 8"

1 3/4"

"

Steel

Yes.

3/4"

5

9" x 3/4" (actually 25/32")

Steel plates.

3

74

154

16" x 12"



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VERTICAL DONKEY BOILERS.

If the Donkey Boilers are Vertical the following particulars should be stated in addition to those on previous Pages applicable to such Boilers:—

Type of Boilers

None.

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

Effective Diar.

Material

External Diar. of Firebox at Top

Bottom

Thickness of Plates

No. of Water Tubes

Int. Diar.

"

"

Material of Water Tubes

No. of Screwed Stays in Firebox Sides

Eff. Diar.

Material

Are they fitted with Nuts inside?

Outside?

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 Superheaters

Diar.

Area

Are " " fitted with Easing Gear?

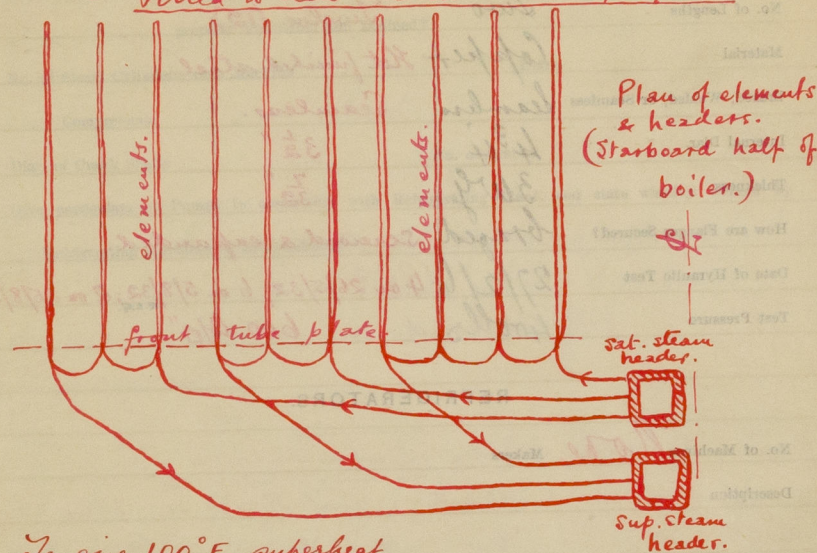
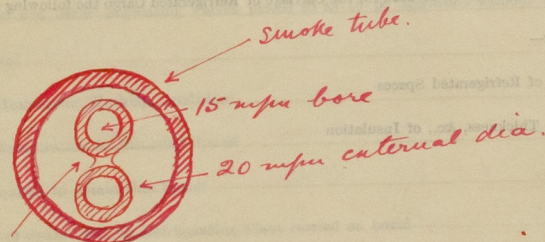
Date of Hydraulic Test

Test Pressure

Date when Safety Valves set

Pressure on Valves

SKETCHES.

- *fitted to new main boilers, 1932.* -*To give 100°F. superheat.*

15 20 mpm Solid-drawn steel elements in Smoke tubes, forged steel and headers in Smoke-box. Made by The Superheaters Co. Ltd., London.

Both main boilers.

Headers stamped (B.O.T. &) B.C. TEST. 600 LBS/□ (S LB) 15-3-32.

Complete installation tested in place at 400 lbf/□, 13/5/32.

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MAIN STEAM PIPES.

No. of Lengths	Two	Twelve (12)
Material	Copper	Hot finished steel.
Brazed, Welded, or Seamless	Seamless	Seamless.
Internal Diam.	4 3/4"	3 1/2"
Thickness	3 W.G.	7/32"
How are Flanges Secured?	braced	Screwed & expanded.
Date of Hydraulic Test	27/2/6	4 on 26/5/32; 6 on 5/8/32; 2 on 25/8/32.
Test Pressure	400 lbs	600 W.G.

REFRIGERATORS.

No. of Machines *None* Makers

Description

When any part of the Vessel is to be used for the Carriage of Refrigerated Cargo the following particulars should be stated:—

Total Cubic Capacity of Refrigerated Spaces

Nature, Construction, Thickness, &c., of Insulation

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

Are all Bilge Suction, Sounding, and Air Pipes in Insulated Spaces properly insulated?

Are Thermometer Tubes so arranged that Water cannot enter and freeze in the Tubes?

Are Sluice Valves fitted on any of the Bulkheads of Insulated Spaces?

Are these fitted with Brass Non-return Valves?

Are they always accessible?

Are the Bilges and Bilge Rose Boxes always accessible?

Are the Steam Suctions to Bilges fitted with Non-return Valves?

Is the Machine Room effectively separated from Insulated Spaces?

" " properly Ventilated and Drained?

No. of Steam Cylinders, each Machine

Diars.

" Compressors, " "

Diam. of Crank Shafts

No. of Cranks

Give particulars of Pumps in connection with Refrigerating Plant, and state whether worked by

Refrigerating Machines or independently

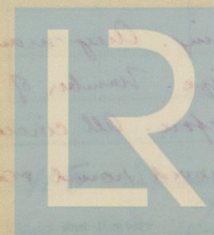
Are Brine and other Regulating Valves placed so as to be accessible without entering the Insulated Spaces?

Date of Test under Working Conditions

Fall of Temperature in Insulated Spaces

Time required to obtain this Result

Articles of Spare Gear for Refrigerating Plant carried on board



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SKETCHES.

ALTERATIONS & ADDITIONS-1932.-

(Switch board not altered.)

Rewired by Alex. Stephen & Sons Ltd. (9/32.)
(Readings as opposite)

Port side light 1 40 watts .04 amp. 3/.029 20 7.8 amp. 22.17 ohms
 Starboard do. 1 40 .04 3/.029 20 7.8 22.19
 Telegraph on B'dge 1 20 .02 " 10 " "
 after Compass 1 " " " " " "
 New, by same firm.

Eng. room lantern	1	200	2 amps.	"	1000	"	"
Boiler top, light	1	40	.04 amp.	"	20	"	"
Feeds to no. 3 hold	—	—	—	"	—	"	"
Fore mast lantern	1	300	3 amps.	"	1500	"	"
Extra lts in accom.	12	40	4.8 "	"	2400	"	"
do. after 'tween d'k	6	"	2.4 "	"	1200	"	"

(Take place of aft. accom. lts.)

Above principally branch wiring. Any main cable taken down was replaced by same size. Number of lights after alterations about same as before. All circuits overhauled & faults removed. Dynamo moved round & cable renewed.

ELECTRIC LIGHTING.

Installation Fitted by

Jelford Grier & Machay Ltd

No. and Description of Dynamos

one, compound

Makers of Dynamos

Mavor Boulton

Capacity

Amperes, at

100 Volts,

300

Revs. per Min.

Current ~~Alternating~~ Continuous

Position of Dynamos

Engine room platform, starboard fore side
on ship side above dynamo

Main Switch Board

No. of Circuits to which Switches are provided on Main Switch Board

8

Particulars of these Circuits:-

No. of Circuit.	Name of Circuit.	Number of Lights.	Candle Power.	Current Required. Amps.	Size of Conductor.	Current Density.	Conductivity of Conductor.	Insulation Resistance per Mile.
1	Forward	9	16	5.4	7/20			600 Mega
2	Fore Hold	14	16	8.4	7/20			
3	Main Hold	10	16	6.	7/20			
4	Aft Hold	6	16	3.6	7/20			
5	Engine room	8	16	4.8	7/20			
6	Saloon	39	16	23.4	7/14			
7	Eng room	24	16	14.4	7/18			
8	Navigation	5	32	6.	7/20			

Total No. of Lights

115

No. of Motors driving Fans, etc.

No. of Heaters

None

Current required for Motors and Heaters

2 amps

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

none

Are Cut-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

yes

On Aux. " " each Auxiliary Circuit

✓

Wherever a Cable is reduced in size

✓

To each Lamp Circuit

yes

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

yes

Are the Fuses of Standard Sizes?

yes

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

yes

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

*yes*Smallest Single Wire used, No. *20* S.W.G., Largest, No. *14* S.W.G.

How are Conductors in Engine and Boiler Spaces protected?

Armoured & braided

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

Lead lined

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp

Armoured & braided

(2) " " passing through Bunkers or Cargo Spaces

Armoured & braided

(3) " " Deck Beams or Bulkheads

*Armoured & braided*Are all Joints in Cables properly soldered and thoroughly insulated so that the efficiency of the Cables is unimpaired? *yes*Are all Joints in accessible positions, none being made in Bunkers or Cargo Spaces? *yes*

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? *100,000*

Ohms.

Is the Installation supplied with a Voltmeter? *yes*" " " an Ampere Meter? *yes*Date of Trial of complete Installation *23/3/17*

Duration of Trial

6 hours

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EVAPORATORS.

No. *None* Type ☒ Tons per Da *up*
 Makers *up*
 Working-Pressure *up* Test Pressure *up* Date of Test *up*
 Date of Test of Safety Valves under Steam *up*

FEED WATER HEATERS.

No. *One* Type *2 1/2" pipe (inside boiler)*
 Makers *Hamilton & McMaster*
 Working Pressure *up* Test Pressure *up* Date of Test *up*

No. of Donkeys

Type "

Makers "

Single or Duplex

" Double-Acting

Diar. of Steam Cylinders

" Pumps

Stroke of "

Where do they pump from?

Where do they discharge to?

Capacity, Tons per Hour of Ballast Donkey

DONKEY.

<i>Ballast</i>	<i>General service</i>
<i>One</i>	<i>One</i>
<i>Vertical</i>	<i>Vertical</i>
<i>Lamont & Co</i>	<i>Lamont & Co</i>
<i>Duplex</i>	<i>Duplex</i>
<i>Double</i>	<i>Double</i>
<i>7"</i>	<i>6"</i>
<i>7"</i>	<i>4 1/4"</i>
<i>8"</i>	<i>6"</i>
<i>Tanks Bilges</i>	<i>Sea Tanks Bilges</i>
<i>separate bilge</i>	<i>Fore peak, special bilge</i>
<i>Sea.</i>	<i>Hotwell.</i>
<i>Overboard</i>	<i>Overboard deck</i>
<i>Condenser</i>	<i>Main boilers. Dry bls</i>
<i>Tanks Main Bl.</i>	<i>Salty tank</i>
<i>Dry Bls.</i>	
<i>70</i>	

Diar. of Pipe required by Rule for

FEED WATER FILTERS.

No. *1* Type *Rankine's high press* Size *3 1/4" pipe*
 Makers *Rankine Cockayne & Co.*
 Working Pressure *165 lbs* Test Pressure *432.* Date of Test *31/10/6*

FORCED DRAUGHT FANS.

No. of Fans *None* Disr. *up* Revols. per min. *up*
 How are Fans driven? *up*

PUMPS.

Donkey Boiler
One
Vertical
Lamont & Co
Duplex
Double
4 1/2"
3"
6"
Sea

Donkey boiler

largest Ballast Tank

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FoundationVelocity of Water in Pipe *8 1/2 ft per min*

SPARE GEAR.

No. of Top End Bolts	2	No. of Bot. End Bolts	2
„ Main Bearing Bolts	2	„ Coupling Bolts	6
„ Cylr. Cover Studs	12 6	„ Valve Chest Cover Studs	6 6
„ Feed Pump Valves	seats 1 set	„ Bilge Pump Valves	seats 1 set
„ Safety Valve Springs	2 one of each size.	„ Fire Bars	1/4 set each boiler.
„ Piston Rings		„ Junk Ring Bolts	12
„ Piston Rods		„ Connecting Rods	✓
„ Valve Spindles		„ Air Pump „	✓
„ Air Pump Valves	1 set	„ „ „ Buckets	✓
„ Crank Pin Bushes	2	„ Crosshead Bushes	2
„ Crank Shafts	✓	„ Propeller Shafts	✓
„ Propellers	✓	„ „ „ Blades	2
„ Boiler Tubes	6	„ Condenser Tubes	24
		„ ferrules	60

OTHER ARTICLES OF SPARE GEAR:—

Propeller studs 7
 Escape valve springs 3
 Check valve 1 each size
 Eccentric bolts & nuts 2

GENERAL CONSTRUCTION.

Have all the Requirements under Sections 31 and 32 of the Rules been complied with? *yes yes.*

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

Surveyor ✓

Are the Steam Pumping Arrangements in accordance with the approved Plan? *yes*

If not, state in what respects they differ and when such differences were sanctioned by the Chief

Surveyor ✓

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.

as ascertained by ~~me~~ from personal examination.

after alterations noted in red
 5/9/32
J. Wood Harrington.

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 Engineers Surveyors to the British Corporation for the
 Survey and Registry of Shipping.

Fees—

MAIN BOILERS.		£	s.	d.
H.S.	Sq. ft.	18	0	0
G.S.	"			
incl. DONKEY BOILERS.				
H.S.	Sq. ft.			
G.S.	"			
		£	18	0 : 0
ENGINES.				
L.P.C.	Cub. ft.	17	0	0
Testing, &c.				
Expenses ...				
Total ...		£	35	0 : 0

It is submitted that this Report be approved,

Phoebe King
Chief Surveyor.

Approved by the Committee, for the class of M.B.P.*
on the 10. August 1907.

Fees applied for 26-3-07

Fees paid 29-3-07

Blueplanning
Secretary.

Harbour trial 31/8/32 after floating safety valves.

Sea trial 2/9/32 — two runs over Skelmorlee

measured mile and thereafter cruising in Firth.
Press. at boiler 204 lb/sq. Superheat 132° F.

" " H.P. 192½ " " 129° F.

" " M.P. 68 " " 35° F.

" " L.P. 8½ " —

Vac. 26.9" (say 27")

15.1 lb. of water per I.H.P. per hour for all purposes.

11.8 Knots at 81½ revs. per min.

I.H.P. = 940.

All above figures are the mean of the two runs.

* * *

On return trip to & from Bristol, the consumption was 13.2 lb. water per I.H.P./hr. for all purposes with 24" vac. and 80° F. superheat (mixing valve slightly open.)

dtf.
14/9/32.

N.B. The 1907 mean I.H.P. = 1847

Speed 13½ Knots at 90 revs/min.

dtf.
14/9/32.



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22/2/32

21/3/32

10 "

18 "

23 "

30 "

574/32 - R.L.G.

12 "

18 "

20 "

28 " - R.L.G.

4/5/32

10 "

12 "

13 "

18 "

24 "

26 "

30 "

31 "

3/6/32

7 " } G.M.S.

8 " }

10 " - J.B.

21 " - G.M.S.

30 "

6/7/32

12 "

29 "

5-8.32 R.L.G.

2 miles J.B.

18/8/32 G.M.S.

23 "

25 "

30 "

31 "

2/9/32.



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