

$\frac{10}{272}$

No. 2359

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 2348 No. in Register Book 3496

S.S. "Orchy"

Makers of Engines Aulsebrook & Co., Ltd.

Works No. 150

Makers of Main Boilers J.G. Kincaid & Co., Ltd.

Works No. 196

Makers of Donkey Boiler Cochran & Co., Ltd.

Works No. 11602.

MACHINERY



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Report No. No. in Register Book

S.S. "Orchy."

Makers of Engines *Ailsa Shipbuilding Co., Ltd.*

Works No. *150*

Makers of Main Boilers *J. G. Kincaid & Co., Ltd.*

Works No. *196.*

Makers of Donkey Boiler *Cochran & Co. Ltd.*

Works No. *11602.*

MACHINERY.



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No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 322 No. in Register Book

Received at Head Office

1st July 1930

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the ~~Single~~ ^{Single} ~~Triple~~ ^{Triple} ~~Steam~~ ^{Steam} ~~Engine~~ ^{Engine} ~~Steamer~~ ^{Steamer}

"Orchy"

Official No.

Port of Registry

Glasgow.

Registered Owners

William Sloan & Co.,
Glasgow.

Engines Built by

Ailsa Shipbuilding Co., Ltd.
Troon.

at

Main Boilers Built by

John G. Kincaid & Co., Ltd.
Greenock.

at

Donkey

"

Cochran & Co., Ltd.
Annan.

at

Date of Completion

23/6/30.

First Visit

23/12/29.

Last Visit

23/6/30

Total Visits

27

Add visits to Kincaid's
(R.L.G.)

15

42

RECIPROCATING ENGINES.

Works No.	No. of Sets	Description
150	One	Triple expansion surface-condensing vertical steam.

No. of Cylinders each Engine **3** No. of Cranks **3**
 Diars of Cylinders **17", 28½" and 48"** Stroke **36"**
 Cubic feet in each L.P. Cylinder **37.8**

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

Yes.

" " each Receiver? M.P. and L.P. only.

Type of H. P. Valves, *Andrews & Cameron*

~~1st LP~~ "M.P." "
2nd LP "

Valve Gear *Stephenson Link.*

Condenser *Circular riveted steel* Cooling Surface *1250* sq. ft.

Diameter of Piston Rods (plain part) $5\frac{1}{4}"$ Screwed part (bottom of thread)

Material " Steel bar.

Diam. of Connecting Rods (smallest part)	5"	Material	Forged Steel
------------------------------------------	----	----------	--------------

” Crosshead Gudgeons 5” Length of Bearing 5+5” Material 1/4”

No. of Crosshead Bolts (each) 4 Diar. over Thrd. $2\frac{1}{8}$ " Thrds. per inch Material M.S.

„ Crank Pin „ „ 2 „ 2 $\frac{3}{4}$ „ „ „ „

„ Main Bearings: 6 Lengths 1'-0"

„ Bolts in each 2 Diar. ~~over~~ Thread 2" Threads per inch 4 Material "

„ Holding Down Bolts, each Engine 84 Diar. 1 1/8" No. of Metal Chocks 84

Are the Engines bolted to the Tank Top or to a Built Seat? *Tank top*

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

If not, how are they fitted?

Connecting Rods, Forged by *Langley Forge Co., Ltd.*

Piston	"	"	"	"	"
--------	---	---	---	---	---

Crossheads, " Langley Forge Co., Ltd.

Connecting Rods, Finished by *Ailsa Shipbuilding Co., Ltd.*

Piston " "

Crossheads, " " " " Is State or Double Reduction Gear employed?

Date of Harbour Trial 17/6/30.

„ Trial Trip 19/6/20 and 23/6/20.

Trials run at *Shelmorcie & Firth of Clyde.*

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

If so, what was the I.H.P.? 1500 Revs. per min. 107

Pressure in ~~Receiver~~ Receiver, 211 lbs., and I.P., 79 lbs., L.P., 19 lbs., Vacuum, 27 in.

Speed on Trial **13.7 Knots.**

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

Builders' estimated I.H.P.

Estimated Speed _____ knots

Condenser tested at 15 lb/0° hyd. in
presence of owner's Supt. (Mr. Hill) on
14/3/30.

H.P. cyl. tested at 315 lb/sq" hyd. press. }
M.P. " " " 100 " " " }

L.P. " tested at 20 " by W. Hill (Supt.) & W. Shepherd (B.T.)
on 3/3/30.
on 28/1/30.

TURBINE ENGINES.

Works No.	Type of Turbines		
No. of H.P. Turbines	No. of L.P.	No. of L.P.	No. of Stern
Are the Propeller Shafts driven direct by the Turbines or through Gearing?			
Is Single or Double Reduction Gear employed?			
Diam. of 1st Reduction Pinion	} Width	Pitch of Teeth	
" 1st " Wheel			
Estimated Pressure per lineal inch			
Diam. of 2nd Reduction Pinion	} Width	Pitch of Teeth	
" 2nd " Wheel			
Estimated Pressure per lineal inch			
Revs. per min. of H.P. Turbines at Full Power			S.H.P.
" " L.P. " "			
" " L.P. " "			
" " 1st Reduction Shaft			
" " 2nd " "			
" " Propeller Shaft			
Total Shaft Horse Power			
Date of Harbour Trial			
" Trial Trip			
Trials run at			
Speed on Trial	Knots.	Propeller Revs. per min.	S.H.P.
Turbine Spindles forged by			
" Wheels forged or cast by			
Reduction Gear Shafts forged by			
" Wheels forged or cast by			

TURBO-ELECTRIC MACHINERY. DESCRIPTION OF INSTALLATION.

No. of Turbo-Generating Sets	Capacity of each
Type of Turbines employed	Description of Generators
Are the Propeller Shafts driven direct by the Motors or through Gearing?	
Is single or double Reduction Gear employed?	
Description of Motors	
Diam. of 1st Reduction Pinion	
} Width	Pitch of Teeth
	" 1st " Wheel
Estimated Pressure per lineal inch	
Diam. of 2nd Reduction Pinion	
} Width	Pitch of Teeth
	" 2nd " Wheel
Estimated Pressure per lineal inch	
Revs. per min. of Generators at Full Power	
" " Motors	
" 1st Reduction Shaft	
" " 2nd " "	
" " Propeller Shaft	
Total Shaft Horse Power	
Date of Harbour Trial	
" Trial Trip	
Trials run at	
Speed on Trial	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

Width

Pitch of Teeth

" 1st " Wheel

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

Width

Pitch of Teeth

" 2nd " Wheel

Estimated Pressure per lineal inch

Revs. per min. of Generators at Full Power

" " Motors "

" " 1st Reduction Shaft

" " 2nd "

" " Propellers at Full Power

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial

Knots. Propeller Revs. per min.

S.H.P.

Makers of Turbines

" Generators

" Motors

" Reduction Gear

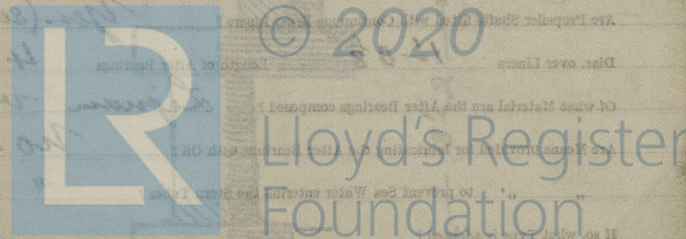
Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

DESCRIPTION OF INSTALLATION.



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SHAFTING.

Are the Crank Shafts Built or Solid?

Built.

No. of Lengths in each

3

Angle of Cranks

120°

Diam. by Rule

9.799"

Actual

10 1/4"

In Way of Webs

10 1/2"

" of Crank Pins

10 1/4"

Length between Webs

1'-0"

Greatest Width of Crank Webs

1'-7 1/2"

Thickness

6 1/4"

Least

*Dowels*Diam. of ~~pins~~ in Crank Webs*1 1/8"*

Length

4"

" Dowels in Crank Pins

1 1/2"

Length

3"

Screwed or Plain

Plain.

No. of Bolts each Coupling

6

Diam. at Mid Length

2 1/4"

Diam. of Pitch Circle

1'-4 1/8"

Greatest Distance from Edge of Main Bearing to Crank Web

3/8"

Type of Thrust Blocks

Mitchell.

No. " Rings

one.

Diam. of Thrust Shafts at bottom of Collars

10 1/8"

No. of Collars

one.

" " Forward Coupling

"

At Aft Coupling

10 1/8"

Diam. of Intermediate Shafting by Rule

9.331"

Actual

9 5/8"

No. of Lengths

3

No. of Bolts, each Coupling

6

Diam. at Mid Length

2 1/4"

Diam. of Pitch Circle

1'-4 1/8"

Diam. of Propeller Shafts by Rule

10.414"

Actual

10 3/4"

At Coupling

10 1/4"

Are Propeller Shafts fitted with Continuous Brass Liners?

Yes. (see p. 38.)

Diam. over Liners

1'-0 1/8"

Length of After Bearings

4'-2"

Of what Material are the After Bearings composed?

Lignum vitae.

Are Means provided for lubricating the After Bearings with Oil?

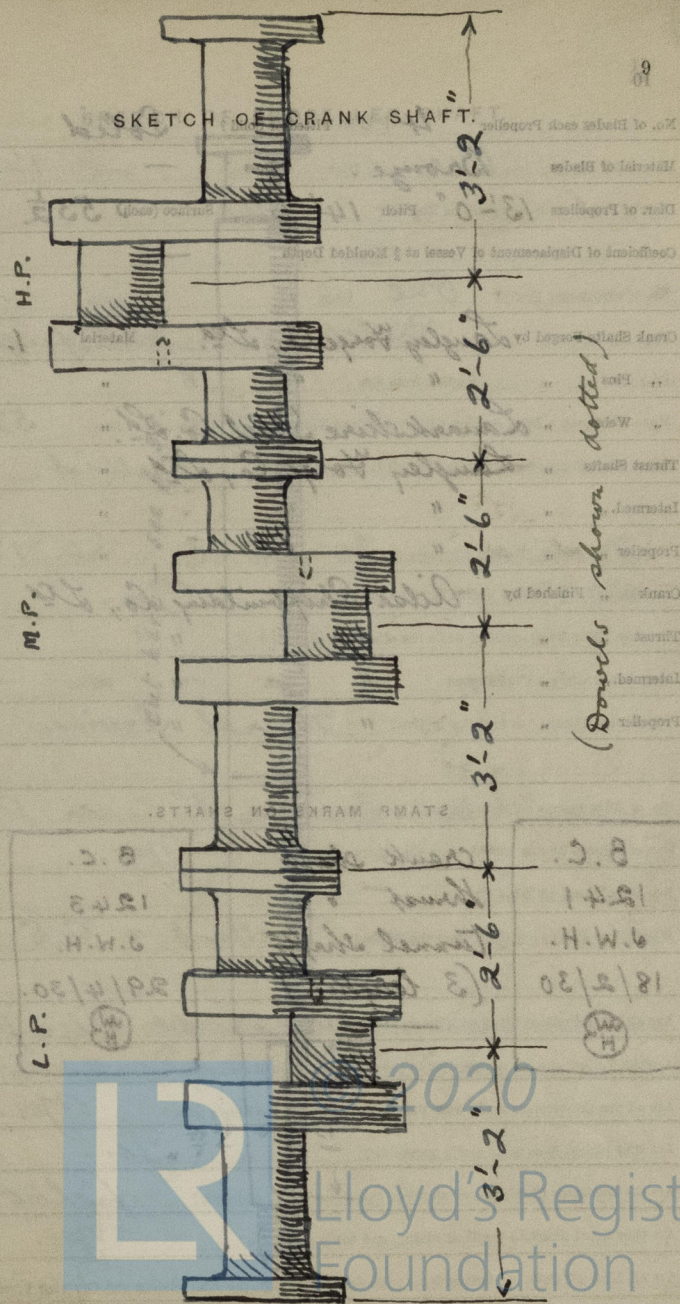
no.

" " to prevent Sea Water entering the Stern Tubes?

"

If so, what Type is adopted?

SKETCH OF CRANK SHAFT.



No. of Blades each Propeller

4

Fitted or Solid?

Solid

Material of Blades

Bronze.

Boss

—

Diam. of Propellers

13'-0"

Pitch

14'-6"

Surface (each)

53½

S. ft.)

Coefficient of Displacement of Vessel at ½ Moulded Depth

Crank Shafts Forged by

Langley Forge Co., Ltd.

Material

I. S.

Pins

"

"

"

"

"

Webs

"

Lanarkshire Steel Co. Ltd.

"

"

Thrust Shafts

"

Langley Forge Co., Ltd.

"

"

Intermed.,

"

"

"

"

"

Propeller

"

"

"

"

"

Crank Finished by

Ailsa Shipbuilding Co., Ltd.

Thrust

"

"

"

Intermed.,

"

"

"

Propeller

"

"

"

STAMP MARKS ON SHAFTS.

B.C.

1241

J.W.H.

18/2/30



Crank shaft

Thrust

Tunnel shafts
(3 lengths.)

B.C.

1243

J.W.H.

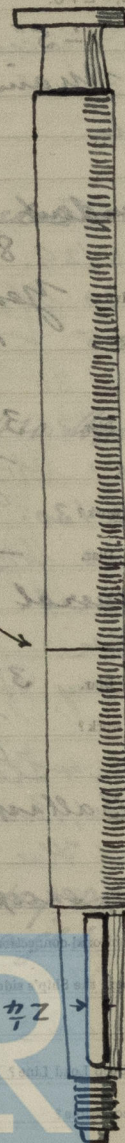
29/4/30.



tail

shaft.

SKETCH OF PROPELLER SHAFT.



2 7/8"

1'-10 3/4"

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PUMPS, ETC.

No. of Air Pumps *One* Diar. *1'-5"* Stroke *1'-6"*
 Worked by Main or Independent Engines? *Main*

No. of Circulating Pumps *One* Diar. Stroke
 Type of *Independent centrifugal.*
 Diar. of *8"* Suction from Sea
 Has each Pump a Bilge Suction with Non-return Valve? *Yes.* Diar. *5 1/2"*
 What other Pumps can circulate through Condenser? *Ballast.*

No. of Feed Pumps on Main Engine *2* Diar. *3"* Stroke *1'-6"*
 Are Spring-loaded Relief Valves fitted to each Pump? *Yes.*
 Can one Pump be overhauled while the others are at work? *"*

No. of Independent Feed Pumps *—* Diar. *—* Stroke *—*
 What other Pumps can feed the Boilers? *General Service.*

No. of Bilge Pumps on Main Engine *2* Diar. *3"* Stroke *1'-6"*
 Can one Pump be overhauled while the others are at work? *Yes.*

No. of Independent Bilge Pumps *—*
 What other Pumps can draw from the Bilges? *Ballast & G.S.*

Are all Bilge Suctions fitted with Roses? *Yes, except bilge pump*
 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.*

BOILERS

22062 by *Drysdale & Co. Ltd.*

Barrels tested at 420 lb/sq" hydraulic press. *(H)*

25/3/30

Suctions in m/cy space, which have mud boxes & straight tail pipes.



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BOILERS

Works No. 196 (John G. Kincaid & Co. Ltd.)
 No. of Boilers 2 Type Cylindrical multitubular.
 Single or Double-ended Single
 No. of Furnaces in each 3
 Type of Furnaces Deighton
 Date when Plan approved 4/11/29.
 Approved Working Pressure 210 lb/sq
 Hydraulic Test Pressure 365 "
 Date of Hydraulic Test 1/4/30
 " when Safety Valves set 17/6/30
 Pressure at which Valves were set 217 lb/sq
 Date of Accumulation Test 17/6/30
 Maximum Pressure under Accumulation Test 220 lb/sq
 System of Draught Natural. (Coal fired.)
 Can Boilers be worked separately? Yes.
 Makers of Plates Steel Company of Scotland Ltd.
 Stay Bars Scottish Iron & Steel Coy., Ltd.
 Rivets North West Rivet, Bolt, & Nut Factory Ltd.
 Furnaces Deighton Patent Hue & Tube Co., Ltd.
 Greatest Internal Diam. of Boilers 14'-3"
 " " Length " 11'-6"
 Square Feet of Heating Surface each Boiler 1898
 " " Grate " 52 1/2
 No. of Safety Valves each Boiler 2 Rule Diam. 2 1/32" Actual 2 3/4"
 Are the Safety Valves fitted with Easing Gear? Yes.
 No. of Pressure Gauges, each Boiler One No. of Water Gauges One
 " Test Cocks 3 " Salinometer Cocks "

B.C. TEST.

5291

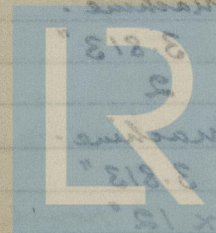
365 lb.

W.P. 210 lb.

R.L.G.

1/4/30.

Dorman Long Britannia Wks.



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Thickness of End Plates in Steam Space Approved

 $\frac{1}{32}$ "

Pillars

" " " " " in Boilers

"

Pipes

Pitch of Steam Space Stays

 $20\frac{1}{2}$ " hor. x 18" vert.

Diar. " " " Approved

 $3\frac{1}{8}$ "

Threads per Inch

6

" " " " " in Boilers

"

"

"

Material of " " "

Steel.

How are Stays Secured?

Nuts with $\frac{1}{4}$ " washers both sides.

Diar. and Thickness of Loose Washers on End Plates

—

" " " Riveted " "

—

Width " " Doubling Strips

—

Thickness of Middle Back End Plates Approved

 $\frac{7}{8}$ "

" " " " " in Boilers

"

Thickness of Doublings in Wide Spaces between Fireboxes

—

Pitch of Stays at

 $14\frac{1}{2}$ " hor. x $9\frac{3}{4}$ " centre;

Diar. of Stays Approved

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

Threads per Inch

9

" " " in Boilers

"

"

"

Material "

Steel.

Are Stays fitted with Nuts outside?

Yes.

Thickness of Back End Plates at Bottom Approved

 $\frac{7}{8}$ "

" " " " " in Boilers

"

Pitch of Stays at Wide Spaces between Fireboxes

(widening.)

Thickness of Doublings in

—

Thickness of Front End Plates at Bottom Approved

1"

" " " " " in Boilers

"

No. of Longitudinal Stays in Spaces between Furnaces

3 round each

bottom manhole.

Top 2 1/2
Diar. of Stay Approved
in Boilers

Threads per Inch

Steel

Thickness of Front Tube Plates Approved

" " " " " in Boilers

Pitch of Stay Tubes at spaces between Stacks of Tubes

 $14\frac{1}{2}$ " hor. x $9\frac{3}{4}$ " vert.

Thickness of Doublings in

" " " Stay Tubes at

Are Stay Tubes fitted with Nuts at Front End

Thickness of Back Tube Plates Approved

" " " " " in Boilers

Pitch of Stay Tubes in Back Tube Plates

 $9\frac{1}{2}$ " hor. x $11\frac{1}{2}$ " vert. (wings) $9\frac{1}{2}$ " wings, vert.

Pitch of Stay Tubes at spaces between Stacks of Tubes

" " " " " in Boilers

Material "

Are Stays fitted with Nuts outside?

Yes.

Thickness of Back End Plates at Bottom Approved

" " " " " in Boilers

Pitch of Stays at Wide Spaces between Fireboxes

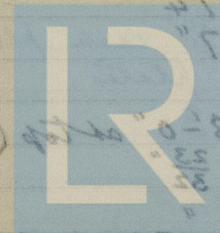
Thickness of Doublings in

Thickness of Front End Plates at Bottom Approved

" " " " " in Boilers

No. of Longitudinal Stays in Spaces between Furnaces

3 round each bottom manhole.



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

Material " Steel. $\times 18"$ vert.

Thickness of Front Tube Plates Approved 1"

" " " " in Boilers Steel "

Pitch of Stay Tubes at Spaces between Stacks of Tubes $14\frac{1}{2}"$ hor. $\times 9\frac{1}{4}"$ vert.

Thickness of Doublings in " " "
 " Stay Tubes at " " " $\frac{11}{32}"$

Are Stay Tubes fitted with Nuts at Front End No.

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

Pitch of Stay Tubes in Back Tube Plates $9\frac{1}{2}"$ hor. $\times 11\frac{9}{16}"$ vert. (wings)
 " Plain " $4\frac{3}{4}" \times 4\frac{5}{8}"$

Thickness of Stay Tubes $\frac{9}{32}"$; top corners $\frac{7}{16}"$ next wide
 " Plain " 8 W.G. (Zaito's patent)

External Diar. of Tubes Stay $3\frac{1}{2}"$; plain $3\frac{1}{2}"$ back to $2\frac{7}{8}"$
 Material " Welded wrought iron.

Thickness of Furnace Plates Approved $5\frac{7}{8}"$

" " " in Boilers "

Smallest outside Diar. of Furnaces $3'-7\frac{1}{4}"$

Length between Tube Plates $7'-7"$

Width of Combustion Chambers (Front to Back) $3'-0"$ at top (ent.)

Thickness of " " Tops Approved $\frac{23}{32}"$

" " " in Boilers "

Pitch of Screwed Stays in C.O. Tops $8\frac{7}{16}" \times 9\frac{3}{8}"$ athwart

spaces.
 tapered.)
 front.



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Diar. of Screwed Stays Approved

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

Threads per Inch

9

" " " in Boilers

"

"

Material " "

Steel.

Thickness of Combustion Chamber Sides Approved

 $\frac{23}{32}$ "

" " " " in Boilers

"

Pitch of Screwed Stays in C.C. Sides

 $8\frac{7}{16}$ " hor. x $9\frac{3}{8}$ " vert.

Diar. " " Approved

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

Threads per Inch

9

" " " in Boilers

"

"

Material " "

Steel.

Thickness of Combustion Chamber Backs Approved

 $\frac{23}{32}$ "

" " " " in Boilers

"

Pitch of Screwed Stays in C.C. Backs

 $8\frac{1}{4}$ " x 9" wings; 8 " x $9\frac{3}{4}$ " etc

Diar. " " Approved

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

Threads per Inch

9

" " " in Boilers

"

"

Material " "

Steel.

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

Yes.
 $\frac{7}{8}$ "

Thickness of Combustion Chamber Bottoms

No. of Girders over each Wing Chamber

4

" " " Centre "

3

Depth and Thickness of Girders

 10 " x $\frac{3}{4}$ " each plate.

Material of Girders

Steel plates.

No. of Stays in each

3

No. of Tubes, each Boiler

230

Size of Lower Manholes

 16 " x 12 "

11602

One type Vertical, Donkey Boilers
 Height 7'-0"
 Diameter of Tubes 16" x 12"
 Thickness of Tubes 3/4"
 Pitch of Tubes 12"
 No. of Tubes 230
 Material Steel
 Thickness of Combustion Chamber Sides 23/32"
 Thickness of Combustion Chamber Backs 23/32"
 Thickness of Combustion Chamber Bottoms 23/32"
 Pitch of Screwed Stays in C.C. Sides 8 7/16" hor. x 9 3/8" vert.
 Pitch of Screwed Stays in C.C. Backs 8 1/4" x 9" wings; 8" x 9 3/4" etc
 Diameter of Screwed Stays 1 7/8"
 Threads per Inch 9
 Material Steel
 Are all Screwed Stays fitted with Nuts inside C.O.? Yes.
 No. of Girders over each Wing Chamber 4
 No. of Girders over Centre 3
 Depth and Thickness of Girders 10" x 3/4" each plate.
 Material of Girders Steel plates.
 No. of Stays in each 3
 No. of Tubes, each Boiler 230
 Size of Lower Manholes 16" x 12"

SUPERHEATERS

(over)



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No. of Boilers *One* Type *Vertical, coal-fired.*

Greatest Int. Diam. *7'-0"* Height *15'-0"*

Makers *Cochran & Co. (Aunan) Ltd.*

Height of Boiler Crown above Fire Grate *Dished; (hemispherical.)*

Is *Top* Boiler Crown *Flat or Dished?* *1" side $\frac{17}{32}$ "*

Internal Radius of Dished End *3'-6"* Thickness of Plates *Single-riveted lap.*

Description of Seams in Boiler Crowns *Single-riveted lap.*

Diam. of Rivet Holes *$\frac{31}{32}$ "* Pitch *2 $\frac{1}{4}$ "* Width of Overlap *3"*

W.P. and End Height of Boiler Crown above Fire Grate *120 16/0"; natural.*

draught: Are Firebox Crowns Flat or Dished? *Dished; (hemispherical.)*

External Radius of Dished Crowns *3'-0"* Thickness of Plates *$\frac{21}{32}$ "*

Shell sides; *top middle bottom*

19" thick *19" thick* *19" thick*

Tube plates; *32 thick* *32 thick* *32 thick*

Internal Diam. of Pipes at Top *front bottom 1 1/8" thick* *Thickness of Tubes* *1"*

stay 32 *32* *32*

No. of Water Tubes *plain 141* Ext. Diam. *2 1/2"* Thickness *7 L.S.G.*

Material of Water Tubes *Shell 15" rivets, 31/32" holes.*

Size of Manhole in Shell *16" x 12"*

Dimensions of Compensating Ring *2'-4" dia. 7/8" thick.*

Heating Surface, each Boiler *600 sq. ft.* Grate Surface *26.75 sq. ft.*

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

Are " " fitted with Easing Gear ?

Date of Hydraulic Test

Test Pressure

Date when Safety Valves set

Pressure on Valves

B. C. TEST.

5290

230 LB.

W.P. 120 LB.

J. W. H.

27/3/30.



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MAIN STEAM PIPES.

No. of Lengths *2*
 Material *Copper*
 Brazed, Welded or Seamless *Seamless*
 Internal Diam. *4"*
 Thickness *2 W.G.*
 How are Flanges secured? *Brazed.*
 Date of Hydraulic Test *one on 10/6/30; one on 13/6/30.*
 Test Pressure *420 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

EVAPORATORS.

Boiler by James Watson & Co. Ltd.
8" and 9" by 8" vertical
General Service by same maker
6" and 4 1/2" by 6" vertical
 FEED WATER HEATERS
Boiler by James Watson & Co. Ltd.
8" and 9" by 8" vertical
General Service by same maker
6" and 4 1/2" by 6" vertical

816

FEED WATER FILTERS

Boiler by James Watson & Co. Ltd.
8" and 9" by 8" vertical
General Service by same maker
6" and 4 1/2" by 6" vertical



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EVAPORATORS.

No. *2* Type *(none.)* Tons per Day
 Makers *Cyprus*
 Working Pressure Test Pressure Date of Test
 Date of Test of Safety Valves under Steam

FEED WATER HEATERS.

No. *One* Type *Exhaust surface, 60* *sq. ft.*
 Makers *Andrews & Cameron Ltd*
 Working Pressure *20 lb/sq. in.* Test Pressure *50 lb/sq. in.* Date of Test *25/3/30.*
Shell 50 lb/sq. in. *G.M.S.*

FEED WATER FILTERS.

No. *One* Type *Cascade.* Size *No. 2*
 Makers *Contraflo Engineering Co., Ltd.*
 Working Pressure *— gravity —* Test Pressure Date of Test

LIST OF DONKEY PUMPS.

Ballast by *Thorn, Lamont & Co., Ltd.*
8" and 9" by 8", vertical
duplex. *14529*

General Service, by *Same makers,*
6" and 4 1/4" by 6", vertical
duplex. *15046*

Donkey Feed, by *Same makers,*
4 1/2" and 3" by 6", vertical
duplex. *14945*



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No. of Top End Bolts.	No. of Bot. End Bolts.	No. of Cylinder Cover Studs
2	2	18
" Coupling Bolts	" Main Bearing Bolts	" Valve Chest "
6	2	
" Junk Ring bolts Studs	" Feed Pump Valves	" Bilge Pump Valves
12	1 set	1 set
" H.P. Piston Rings	" I.P. Piston Rings	" L.P. Piston Rings
" " Springs	" " Springs	" " Springs
" Safety Valve	" Fire Bars	" Feed Check Valves
2	1 set for one main. 1 " " donkey.	1 set.
" Piston Rods	" Connecting Rods	" Valve Spindles
" Air Pump Rods	" Air Pump Buckets	" Air Pump Valves
" Cir.	" Cir.	" Cir.
" Crank Shafts	" Crank Pin Bushes	" Crosshead Bushes
" Propeller Shafts	" Propellers	" Propeller Blades
12 Main 6 stay	" Condenser Tubes	" Condenser Ferrules
24	24	60

OTHER ARTICLES OF SPARE GEAR:—

2 eccentric strap bolts. No. 2.
2 springs for donkey boiler
Safety valves.
2 " " Surface heater
do. do.
3 " " escape valves on
main eng. cyls.
2 " " do. do. "
feed pumps.
12 pins for cyl. false faces.
6 tube stoppers with caps.
6 donkey boiler tubes.

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REFRIGERATORS.

No. of Machines *2* Capacity of each *2* *18*

Makers *6* *18*

Description *(none.)* *18*

No. of Steam Cylinders, each Machine *1* No. of Compressors *1* No. of Cranks *1*

Particulars of Pumps in connection with Refrigerating Plant and whether worked by Refrigerating Machines or Independently *1*

Propeller Shaft *12* plain *1* *18*

Roller Table *6* *18*

Condenser Table *24* *18*

Cumulative Tables *60* *18*

OTHER APPLIANCES OF BRINE CHAMBER—

2 eccentric strap bolts.

2 springs for donkey boiler.

Safety valves.

System of Refrigeration *"* *"* *Surface heat*

Insulation *do* *do*

Are Brine and other Regulating Valves placed so as to be accessible without entering the Insulated Spaces? *main sup. Cyls.*

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

Are all Bilge, Sounding and Air Pipes in Insulated Spaces properly insulated? *do.*

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

Date of Test under Working Conditions *6 donkey boiler tubes.*

ELEC. RESULTS OF TRIALS.

COMPARTMENT.	Temp. at beginning of Trial.	Temp. at end of Trial.	Time required to obtain this Result.	Rise of Temp. after hours.
Makers of Dynamoe	<i>1000</i>	<i>1000</i>	<i>1000</i>	<i>1000</i>
Capacity	<i>8.5W 50P</i>	<i>0.11 x 58</i>	<i>0001</i>	<i>1000</i>
Current Alternating or Continuous	<i>Continuous</i>	<i>Continuous</i>	<i>Continuous</i>	<i>Continuous</i>
Single or Double Wire System	<i>Double</i>	<i>Double</i>	<i>Double</i>	<i>Double</i>
Position of Dynamoe	<i>Starboard side</i>	<i>E.R. bottom platform</i>	<i>Starboard side</i>	<i>E.R. bottom platform</i>
Main Switch Board	<i>on bulk head</i>	<i>beside dynamoe.</i>	<i>on bulk head</i>	<i>beside dynamoe.</i>
Particulars of these Results	<i>provided on Main Switch Board</i>	<i>8</i>	<i>8</i>	<i>8</i>
Navigation.	<i>13</i>	<i>4</i>	<i>007</i>	<i>371</i>
Accommodation.	<i>23</i>	<i>40 W.</i>	<i>85</i>	<i>1214</i>
Bridge.	<i>17</i>	<i>"</i>	<i>6</i>	<i>857</i>
Main Deck.	<i>19</i>	<i>various</i>	<i>11</i>	<i>1871</i>
Holds.	<i>36</i>	<i>140 W.</i>	<i>13</i>	<i>1857</i>
Aft.	<i>21</i>	<i>various</i>	<i>7</i>	<i>1000</i>
Engine Room.	<i>26</i>	<i>100 W.</i>	<i>9.5</i>	<i>1047</i>

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



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RECORDERS

RECORDING

Engine by Caldwell & Co., Ltd. [3210]

$$\frac{82 \times 110}{1000} = 9.02 \text{ KW.}$$

ELECTRIC LIGHTING.

Installation Fitted by *Telford, Grier & Mackay Ltd.* [82062]
 No. and Description of Dynamos *One 9 K.W. D.C. comp. wound.*
 Makers of Dynamos *Lancashire Dynamo & Motor Co., Ltd.*
 Capacity *82* Amperes, at *110* Volts, *300* Revols. per Min.
 Current Alternating or Continuous *Continuous rating.*
 Single or Double Wire System *Double*
 Position of Dynamos *Starboard side E.R. bottom platform.*
 " Main Switch Board *on bulk head beside dynamos.*
 No. of Circuits to which Switches are provided on Main Switch Board *8.*

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.	13	various.	4	.007	571	100%	2500
Accommodation.	23	40 w.	8.5	"	1214	"	"
Bridge.	17	"	6	"	857	"	"
Main Deck.	19	various.	11	"	1571	"	"
Holds.	36	40 w.	13	"	1857	"	"
Aft.	21	various.	7	"	1000	"	"
Engine Room.	26	40 w.	9.5	"	1357	"	"
Spare.							

Total No. of Lights *155* No. of Motors driving Fans, &c. *—* No. of Heaters *—*Current required for Motors and Heaters *—*

Positions of Auxiliary Switch Boards, with No. of Switches on each, *(none.)*

Particulars of these Circuits:	Number of Circuits	Capacity (amps)	Current (amps)	Capacity (amps)	Current (amps)	Capacity (amps)	Current (amps)
Are Out-outs fitted as follows?	13	100	4	100	4	100	4
On Main Switch Board, to Cables of Main Circuits	8	100	4	100	4	100	4
On Aux. " " each Auxiliary Circuit	17	100	4	100	4	100	4
Wherever a Cable is reduced in size	11	100	4	100	4	100	4
To each Lamp Circuit	13	100	4	100	4	100	4
To both Flow and Return Wires of all Circuits when the Double Wire System is adopted	13	100	4	100	4	100	4
Are the Fuses of Standard Sizes?	13	100	4	100	4	100	4
Are all Switches and Out-outs constructed of Non-Inflammable Material?	13	100	4	100	4	100	4
Are they placed so as to be always and easily accessible?	13	100	4	100	4	100	4
Smallest Single Wire used, No. 16 S.W.G., Largest, No. 16 S.W.G.	13	100	4	100	4	100	4
How are Conductors in Engine and Boiler Spaces protected?	13	100	4	100	4	100	4
" " Saloons, State Rooms, &c., " ?	13	100	4	100	4	100	4
What special protection is provided in the following cases?—	13	100	4	100	4	100	4
(1) Conductors exposed to Heat or Damp	13	100	4	100	4	100	4
(2) " " passing through Bunkers or Cargo Spaces	13	100	4	100	4	100	4
(3) " " Deck Beams or Bulkheads	13	100	4	100	4	100	4

Are all Joints in Cables properly soldered and thoroughly insulated so that the efficiency of the Cables is unimpaired? *no joints.*

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

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

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

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

Has the Insulation Resistance over the whole system been tested?

What does the Resistance amount to?

Is the Installation supplied with a Voltmeter?

" " " an Ampere Meter

Date of Trial of complete Installation *17/6/30.* Duration of Trial *6 hours.*

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

with steel plate.

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Deck Tubes thro' decks; packed W.T. glands thro' W.T. bulkheads.

GENERAL CONSTRUCTION.

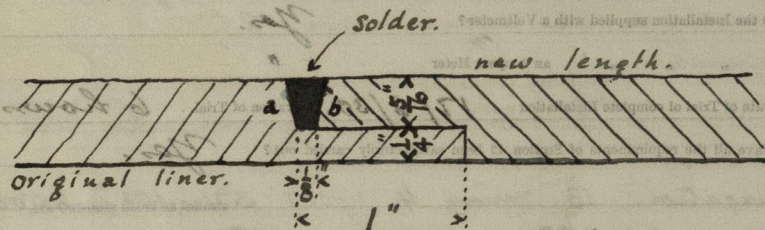
Have the Machinery and Boilers been constructed in accordance with the requirements of the Rules and the

Approved Plans? *Yes, except as detailed below.*

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

Surveyor.

The tail shaft liner was found to be slack near after end. A length of 6 feet was cut off, and a new piece shrunk on, the joint being made as shown below.



The faces a and b were turned before soldering. The new length was found to be tight.

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.*

The above correctly describes the Machinery of the S.S. *"Orchey"*

as ascertained by ^{4th} 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 ...		£	:	:

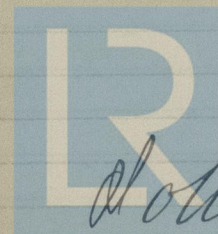
It is submitted that this Report be approved,

W. Green King
Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the 3rd September 1930.

Fees advised

Fees paid



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Secretary.

23/12/29

14/1/30

29 "

30 " ← (Cochran)

7/2/30

14 "

18 "

25 "

3/3/30

11 "

25 "

27 "

1/4/30.

8 "

15 "

22 "

29 "

6/5/30.

13 "

20 "

27 "

3/6/30

10 "

13 "

17 "

19 "

23 "

(Kincaid)

3/2/30

7 "

11 "

14 "

19 "

21 "

25 "

5/2/30

11 "

14 "

19 "

21 "

24 "

27 "

1/4/30

RLG

15 visits



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