

No. 1543

TRANSFERRED TO  
L. R. SYSTEM

THE BRITISH CORPORATION FOR THE SURVEY  
AND  
REGISTRY OF SHIPPING.

Report No. 1537 No. in Register Book 2747

S.S.

KELANTAN

Makers of Engines

CALEDON S.B. COY.

Works No. 464

Makers of Main Boilers

CALEDON S.B. COY.

Works No. 464

Makers of Donkey Boiler

Works No.

MACHINERY.



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002374-002384-0019



No.

THE BRITISH CORPORATION FOR THE SURVEY  
AND  
REGISTRY OF SHIPPING.

Report No. 1537 No. in Register Book 2747

Received at Head Office 14<sup>th</sup> November 1921

Surveyor's Report on the New Engines, Boilers, and Auxiliary  
Machinery of the ~~Single Triple~~ <sup>Twin Quadruple</sup> Screw STEAMER,

KELANTAN.

Official No. 519 <sup>Almond</sup> Port of Registry British Settlements

Registered Owners

Engines Built by Caledon S & Co. Ltd Dundee.

at Lilybank Engine Works.

Main Boilers Built by Caledon S & Co.

at Caledon Boiler Shop.

Donkey " " ✓

at

Date of Completion

20-9-21

First Visit

21-1-20

Last Visit

20-9-21

Total Visits 59

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# *Twin Screw.* RECIPROCATING ENGINES.

Works No. *464* No. of Sets *Two* Description *Inverted Four Cylinder Triple Expansion Reciprocating*

No. of Cylinders each Engine *4* No. of Cranks *4*  
Diars. of Cylinders *12"-20"-24"-24"* Stroke *24"*  
Cubic feet in each L.P. Cylinder *25.132.*

Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr? *H.P. & M.P. Only*

" " " each Receiver? *yes.*

Type of H.P. Valves, *Piston (Solid)*  
" 1st I.P., *Balanced (Andrews)*

" 2nd I.P., *Balanced (Andrews)*  
" L.P., *Balanced (Andrews)*

" Valve Gear *Double Eccentric Link Motion.*

" Condenser *Surface* Cooling Surface *789* sq. ft.  
Diameter of Piston Rods (plain part) *HP 1 1/2" - L.P. 2 3/4"* Screwed part (bottom of thread) *HP 1 1/2" - L.P. 2 1/4"*

Material *Steel*  
Diar. of Connecting Rods (smallest part) *HP 3" - L.P. 2 5/8"* Material *Steel*

" Crosshead Gudgeons *HP 3 1/2" - L.P. 4"* Length of Bearing *HP 1 1/2" - L.P. 1 3/4"* Material *Steel*

No. of Crosshead Bolts (each) *4* Diar. over Thrd. *1 1/2"* Thds. per inch *6 3/4* Material *Calcutta Iron*

" Crank Pin " " *2* " *2 1/8"* " *4 1/2" & 5"* " "

" Main Bearings *6* Lengths *2 @ 10" Long, 4 at 7 1/4" Long*

" Bolts in each *2* Diar. over Thread *1 3/4"* Threads per inch *5* Material *Steel*

" Holding Down Bolts, each Engine *64* Diar. *1"* No. of Metal Chocks *60.*

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

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

If not, how are they fitted?

*Tank Top.*  
*Tapped.*

Connecting Rods, Forged by *Wm Beardmore & Co Ltd Parkhead.*  
Piston " " *D. Corliss & Sons, Motherwell*  
Crossheads, " *Wm Beardmore & Co Ltd Parkhead.*  
Connecting Rods, Finished by *The Caledon S.B. & Eng. Co. Ltd.*  
Piston " " *do*  
Crossheads, " *do.*

Date of Harbour Trial *19-10-21*

" Trial Trip *20-10-21*

Trials run at *Dundee (River Tay)*

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

If so, what was the I.H.P.? *1226* Revols. per min. *150*

Pressure in 1st I.P. Receiver, *174* lbs., 2nd I.P., *69* lbs., L.P., *10* lbs., Vacuum, *28* ins.

Speed on Trial *11 1/2 Knots (Mean)*

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

data:—

Builders' estimated I.H.P. *1200.*

Revol. per min. *150*

Estimated Speed *11 Knots.*



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## TURBINE ENGINES.

Works No.	Type of Turbines		
No. of H.P. Turbines	No. of I.P.	No. of L.P.	No. of Astern

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

Is Single or Double Reduction Gear employed?

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

"	"	I.P.	"	"
"	"	L.P.	"	"
"	"	1st Reduction Shaft		
"	"	2nd	"	"
"	"	Propeller Shaft		

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial

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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## TURBINE ENGINE

No. of Turbine Engines Type of Turbine  
 No. of I.P. Turbines No. of L.P.  
 No. of A.P. Turbines No. of A.P.

Are the Turbine Engines driven direct by the Turbine or through Gear?

Is the Turbine Engine driven direct by the Turbine or through Gear?

Is the Turbine Engine driven direct by the Turbine or through Gear?

1.0

1.0

1.0

1.0

1.0

Total Shaft Horse Power

1.0

1.0

1.0

1.0

1.0

1.0

1.0

1.0

DESCRIPTION OF INSTALLATION

## TURBO-ELECTRIC PROPELLING MACHINERY

No. of Turbine Engines Capacity of each  
 No. of I.P. Turbines Capacity of each  
 No. of A.P. Turbines Capacity of each

No. of Turbine Engines Capacity of each  
 No. of I.P. Turbines Capacity of each  
 No. of A.P. Turbines Capacity of each

No. of Turbine Engines Capacity of each  
 No. of I.P. Turbines Capacity of each  
 No. of A.P. Turbines Capacity of each

1.0

1.0

1.0

1.0

No. of Motors driving Propeller Shafts

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

Is the Propeller Shaft driven direct by the Motors or through Gear?

Description of Motors

1.0

1.0

1.0

1.0

1.0

1.0



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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

Revs. per min. of Generators at Full Power

" " Motors "

" " Propellers "

Total Shaft Horse Power "

Date of Harbour Trial

" Trial Trip

Trials run at

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



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## SHAFTING.

Are the Crank Shafts Built or Solid?

*Built*

No. of Lengths in each

*Two.*

Angle of Cranks

*See Page 13.*Diar. by Rule *6.41*

Actual

*7"*

In Way of Webs

*7"*

" of Crank Pins

*7"*

Length between Webs

*7 3/4" & 6"*

Greatest Width of Crank Webs

*12 5/8"*

Thickness

*4 3/4"*

Least " "

*12 3/8"*

"

*4 3/4"*

Diar. of Keys in Crank Webs

*1 1/4"*

Length

*3"*

" Dowels in Crank Pins

*1"*Length *2 1/4"*

Screwed or Plain

*Screwed.*

No. of Bolts each Coupling

*6*

Diar. at Mid Length

*1 3/4"*

Diar. of Pitch Circle

*10 3/4"*

Greatest Distance from Edge of Main Bearing to Crank Web

*1 1/16"*

Type of Thrust Blocks

*"Michell Thrust."*

No. " Rings

Diar. of Thrust Shafts at bottom of Collars

*7"*

No. of Collars

*One*

" " "

Forward Coupling

*7"*

At Aft Coupling

*4"*

Diar. of Intermediate Shafting by Rule

*6.09*  
*6.175*

Actual

*6 1/2"*

No. of Lengths

*3*

No. of Bolts, each Coupling

*6*

Diar. at Mid Length

*1 3/4"*

Diar. of Pitch Circle

*10 3/4"*

Diar. of Propeller Shafts by Rule

*7.179*  
*7.215*

Actual

*7 3/4"*

At Couplings

*7"*

Are Propeller Shafts fitted with Continuous Brass Liners?

*No.*

Diar. over Liners

*8 3/4"*

Length of After Bearings

*1'-6" Outer Bearings 2 1/2"*

Of what Material are the After Bearings composed?

*Lignum Vitae*

Are Means provided for lubricating the After Bearings with Oil?

*Yes.*

" " "

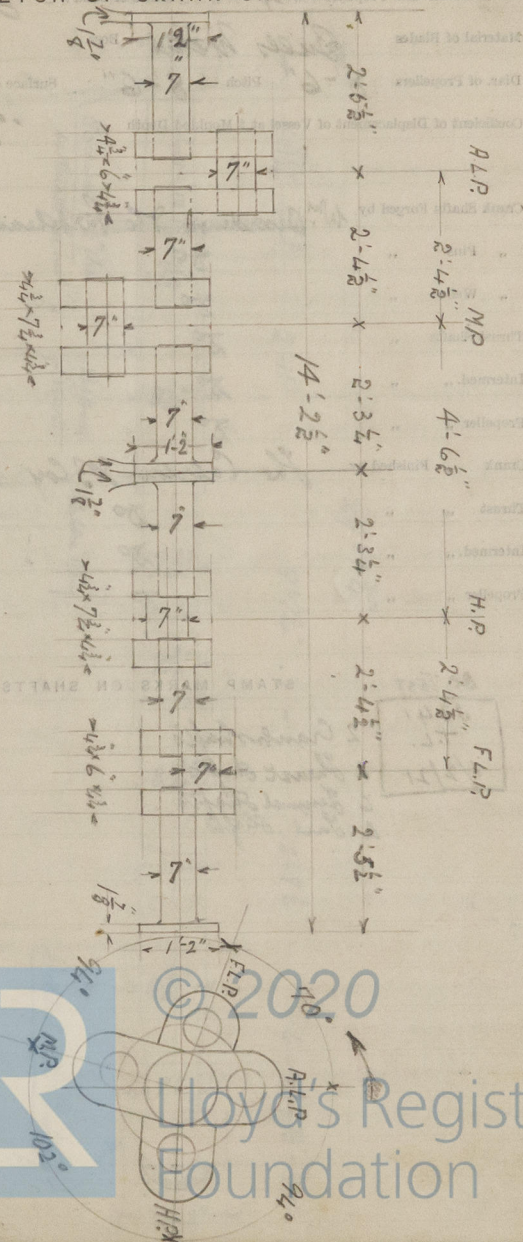
to prevent Sea Water entering the Stern Tubes?

*Yes.*

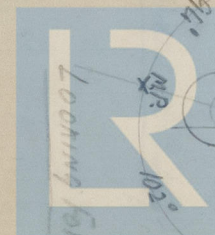
If so, what Type is adopted?

*Cedervall's*

## SKETCH OF CRANK SHAFT.



PORT ENGINE



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No. of Blades each Propeller

4

Fitted or Solid?

Solid

Material of Blades

Bulls Metal

Boss

Diam. of Propellers

8'-6"

Pitch

8'-6"

Surface (each)

23

S. ft.

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

781

Crank Shafts Forged by

Wm. Beardmore &amp; Co. Parkhead.

Material

Steel

Pins

do

"

"

Webs

do

"

"

Thrust Shafts

do

"

"

Intermed. "

do

"

"

Propeller "

do

"

"

Crank " Finished by

The Caledon S/S Coy Dundee.

Thrust "

do

Intermed. "

do

Propeller "

do

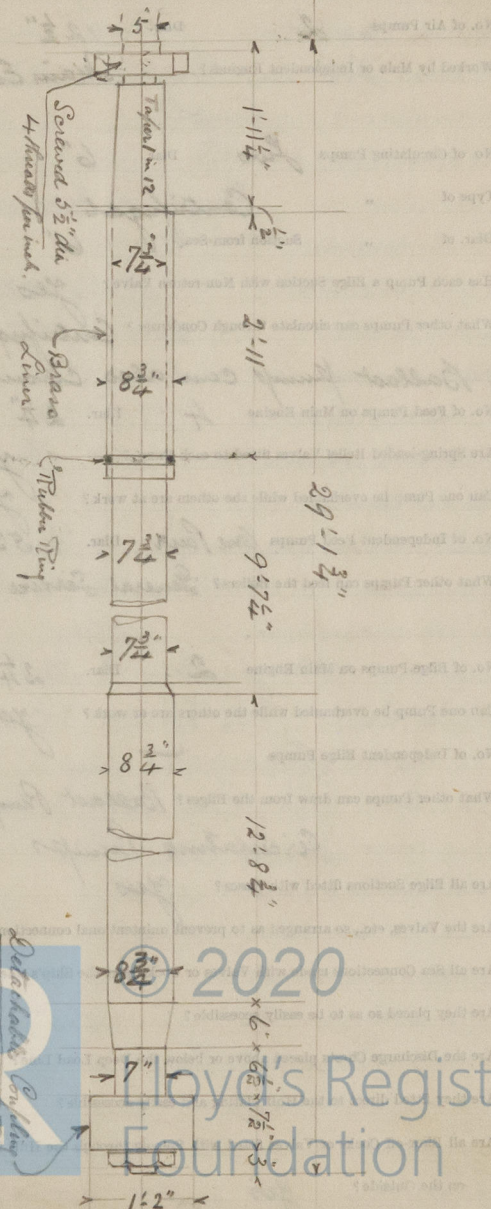
BS. TEST

STAMP MARKS ON SHAFTS.

3241  
T.L.  
1/2/21

2 Crankshafts  
& Thrust Shafts.  
6 Intermed. Shafts  
& Tail Shafts.

## SKETCH OF PROPELLER SHAFT.





## PUMPS, ETC.

No. of Air Pumps *2* Diar. *12 1/2"* Stroke *15"*

Worked by Main or Independent Engines?

*Main Engs.*

No. of Circulating Pumps *Two* Diar. *6"* Stroke

Type of " *Centrifugal*

Diar. of " Suction from Sea *6"*

Has each Pump a Bilge Suction with Non-return Valve? *yes* Diar. *4"*

What other Pumps can circulate through Condenser? *Centrifugal Pumps Cross Connected*

*Ballast Pumps can also circulate Condenser.*

No. of Feed Pumps on Main Engine *4* Diar. *2 1/4"* Stroke *15"*

Are Spring-loaded Relief Valves fitted to each Pump?

*yes*

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

*yes*

No. of Independent Feed Pumps *One Pair* Diar. *3 1/2"* Stroke *15"*

What other Pumps can feed the Boilers? *General Service Pumps*

No. of Bilge Pumps on Main Engine *2* Diar. *2 1/4"* Stroke *16"*

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 Pump & General Service*

*Circulating Pumps*

Are all Bilge Suctions fitted with Roses?

*yes*

Are the Valves, etc., so arranged as to prevent unintentional connection between Sea and Bilges?

*yes*

Are all Sea Connections made with Valves or Cocks next the Ship's sides?

*yes*

Are they placed so as to be easily accessible?

*yes*

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

*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



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## BOILERS.

Works No. **464**  
 No. of Boilers **Two** Type **Multitubular**  
 Single or Double-ended **Single**  
 No. of Furnaces in each **3**  
 Type of Furnaces **Deighton Section**  
 Date when Plan approved **31-7-19**  
 Approved Working Pressure **180 lbs per sq. in.**  
 Hydraulic Test Pressure **320 lbs per sq. in.**  
 Date of Hydraulic Test **29-1-21**  
 " when Safety Valves set **19-10-21**  
 Pressure at which Valves were set **180 lbs.**  
 Date of Accumulation Test **19-10-21**  
 Maximum Pressure under Accumulation Test **11 lbs.**  
 System of Draught **Wallsend Howden Forced. (Oil Fuel)**  
 Can Boilers be worked separately? **Yes.**  
 Makers of Plates **Glasgow Iron & Steel Company Wishaw**  
 Wrapper Plates:- **John Spencer & Sons**  
 " Stay Bars **Lanarkshire Steel Co. Motherwell**  
 " Rivets **The Rivet Bolt & Nut Company.**  
 " Furnaces **Deighton Patent Fuel & Lube Co Ltd Leeds.**  
 Greatest Internal Diam. of Boilers **13'-0"**  
 " " Length " **11'-0"**  
 Square Feet of Heating Surface each Boiler **1561.5**  
 " " Grate " " **49.5**  
 No. of Safety Valves each Boiler **One Pair** Diam. **3"**  
 Are the Safety Valves fitted with Easing Gear? **yes**  
 No. of Pressure Gauges, each Boiler **One** No. of Water Gauges **Two**  
 " Test Cocks " **3** " Salinometer Cocks **One.**

Safety Valve Rings  
 Star 1st Por. Port Boiler  
 4th off 4th AFT.  

25	13	21	25
64	32	64	64

## BOILER TEST.

B.C. TEST.

17° 32' 30"

TEST PRESSURE 320 lbs.

W. P. 180 LBS

J. F. 1-21

29-1-21.



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

*on Pillars*

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

*by Pipes*

Are these Pipes connected to Boilers by Cocks or Valves?

*Cocks*

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

*yes Valves.*

No. of Strakes of Shell Plating in each Boiler

*One.*

" Plates in each Strake

*Two*

Thickness of Shell Plates Approved

*1/32"*

" " in Boilers

*1/32"*

Are the Rivets Iron or Steel?

*Steel*

Are the Longitudinal Seams Butt or Lap Joints?

*Butt.*

Are the Butt Straps Single or Double?

*Double.*

Are the Double Butt Straps of equal width?

*yes*

Thickness of outside Butt Straps

*27/32"*

" inside "

*3/32"*

Are Longitudinal Seams Hand or Machine Riveted?

*Machine*

Are they Single, Double, or Treble Riveted?

*Single*

No. of Rivets in a Pitch

*5*

Diar. of Rivet Holes

*1 1/8"*

Pitch

*8 3/8"*

No. of Rows of Rivets in Centre Circumferential Seams

*-*

Are these Seams Hand or Machine Riveted?

*-*

Diar. of Rivet Holes

Pitch

No. of Rows of Rivets in Front End Circumferential Seams

*2*

Are these Seams Hand or Machine riveted?

*Machine*

Diar. of Rivet Holes

*1 1/8"*

Pitch

*3 1/4"*

No. of Rows of Rivets in Back End Circumferential Seams

*2*

Are these Seams Hand or Machine Riveted?

*Machine*

Diar. of Rivet Holes

*1 1/8"*

Pitch

*3 1/4"*

Size of Manholes in Shell

*16" x 12"*

Dimensions of Compensating Rings

*2'-10 1/2" x 2'-6 1/2"*



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Thickness of End Plates in Steam Space Approved

 $1\frac{3}{16}$ 

" " " " " in Boilers

 $1\frac{3}{16}$ 

Pitch of Steam Space Stays

 $1'-7" \times 1'-6"$ 

Diar. " " " " Approved

 $2\frac{3}{4}"$  Boilers  
3" Ends

Threads per Inch

6

" " " " " in Boilers

80.

80.

Material of " " "

Steel

How are Stays Secured?

Double Nuts

Diar. and Thickness of Loose Washers on End Plates

6" dia  $\times \frac{3}{8}$ 

" " " Riveted " " "

-

Width " " " Doubling Strips " " "

-

Thickness of Middle Back End Plates Approved

 $\frac{25}{32}$ "  
 $\frac{25}{32}$ "  
 $\frac{25}{32}$ "

" " " " " in Boilers

-

Thickness of Doublings in Wide Spaces between Fireboxes

None

Pitch of Stays at

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

" " "

 $13\frac{1}{4}"$ 

Diar. of Stays Approved

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

Threads per Inch

9

" " " in Boilers

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

" " "

9

Material "

Iron

Are Stays fitted with Nuts outside?

Yes

Thickness of Back End Plates at Bottom Approved

 $\frac{25}{32}$ "  
 $\frac{25}{32}$ "  
 $\frac{25}{32}$ "

" " " " " in Boilers

-

Pitch of Stays at Wide Spaces between Fireboxes

 $13\frac{1}{4}"$ 

Thickness of Doublings in

"

"

Thickness of Front End Plates at Bottom Approved

 $27\frac{1}{32}"$ 

" " " " " in Boilers

 $27\frac{1}{32}"$ 

No. of Longitudinal Stays in Spaces between Furnaces

6



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24" x 24" in Body.  
 Diar. of Stays Approved 24" x 24" Ends Threads per Inch 6  
 " " in Boilers 20 20.  
 Material " Steel

Thickness of Front Tube Plates Approved 27 3/32"  
 " " " " in Boilers 27 3/32".  
 Pitch of Stay Tubes at Spaces between Stacks of Tubes 14 1/2"  
 Thickness of Doublings in " " " 13/16"  
 " Stay Tubes at " " " 3/8"  
 Are Stay Tubes fitted with Nuts at Front End? No

Thickness of Back Tube Plates Approved 3/4"  
 " " " in Boilers 3/4"  
 Pitch of Stay Tubes in Back Tube Plates 9 1/2" x 9 1/2"  
 " Plain " 4 3/4" x 4 3/4"  
 Thickness of Stay Tubes 3/8"  
 " Plain " No 7 W.S.  
 External Diar. of Tubes 3 1/2"  
 Material " Iron.

Thickness of Furnace Plates Approved 1/2"  
 " " " in Boilers 1/2"  
 Smallest outside Diar. of Furnaces 3'-1"  
 Length between Tube Plates 7'-0"

Width of Combustion Chambers (Front to Back) 3'-0" near plates.  
 Thickness of " " Tops Approved 1/2"  
 " " " " in Boilers 1/2"  
 Pitch of Screwed Stays in C.O. Tops 7" x 6 1/2"



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Diar. of Screwed Stays Approved  $1\frac{1}{2}"$  Threads per Inch 9  
 " " " in Boilers  $1\frac{1}{2}"$  9  
 Material " " Iron

Thickness of Combustion Chamber Sides Approved  $\frac{17}{32}"$   
 " " " " in Boilers  $\frac{17}{32}"$   
 Pitch of Screwed Stays in O.C. Sides  $7\frac{3}{8}" \times 7"$   
 Diar. " " Approved  $1\frac{1}{2}"$  Threads per Inch 9  
 " " " in Boilers  $1\frac{1}{2}"$  9  
 Material " " Iron.

Thickness of Combustion Chamber Backs Approved  $\frac{17}{32}"$   
 " " " in Boilers  $\frac{17}{32}"$   
 Pitch of Screwed Stays in O.C. Backs  $7\frac{3}{8}" \times 7"$   
 Diar. " " Approved  $1\frac{1}{2}"$  Threads per Inch 9  
 " " " in Boilers  $1\frac{1}{2}"$  9  
 Material " " Iron

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

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 Tubes, each Boiler

Size of Lower Manholes

5  
 4  
 $9\frac{1}{8}" \times 1\frac{1}{4}"$   
 Steel  
 4

190  
 $16" \times 12"$

yes  
 $\frac{25}{32}$

# VERTICAL DONKEY BOILERS

Boilers fitted for either  
 Coal or Oil Burning.  
 Trial carried out on Oil.



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## VERTICAL DONKEY BOILERS.

No. of Boilers	Type		
Greatest Int. Diar.	Height		
Height of Boiler Crown above Fire Grate			
Are Boiler Crowns Flat or Dished?			
Internal Radius of Dished Ends	Thickness of Plates		
Description of Seams in Boiler Crowns			
Diar. of Rivet Holes	Pitch	Width of Overlap	
Height of Firebox Crowns above Fire Grate			
Are Firebox Crowns Flat or Dished?			
External Radius of Dished Crowns	Thickness of Plates		
No. of Crown Stays	Diar.	Material	
External Diar. of Firebox at Top	Bottom	Thickness of Plates	
No. of Water Tubes	Ext. Diar.	Thickness	
Material of Water Tubes			
Size of Manhole in Shell			
Dimensions of Compensating Ring			
Heating Surface, each Boiler	Grate Surface		

## SUPERHEATERS.

Description of Superheaters	
Where situated?	
Which Boilers are connected to Superheaters?	
Can Superheaters be shut off while Boilers are working?	
No. of Safety Valves on each Superheater	Diar.
Are " " fitted with Easing Gear?	
Date of Hydraulic Test	Test Pressure
Date when Safety Valves set	Pressure on Valves

## MAIN STEAM PIPES

No. of Pipes			
Material			
Internal Diar.			
Thickness			
How are Flanges secured?			
Date of Hydraulic Test			
Test Pressure			
No. of Flanges			
Material			
Internal Diar.			
Thickness			
How are Flanges secured?			
Date of Hydraulic Test			
Test Pressure			
No. of Flanges			
Material			
Internal Diar.			
Thickness			
How are Flanges secured?			
Date of Hydraulic Test			
Test Pressure			



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## MAIN STEAM PIPES.

No. of Lengths	4	2	2 Cross Connections
Material	Steel L.W.S.	Steel L.W.S.	Steel L.W.S.
Brazed, Welded or Seamless	Solid Seam.	Solid Seam.	L.W.S.
Internal Diam.	4"	3"	3
Thickness	1/4.	1/4	1/4
How are Flanges secured?	Screw & Exp.	Screw & Exp.	Screw & Exp.
Date of Hydraulic Test	29-4-21	7-4-21	7-4-21.
Test Pressure	540 lbs	540 lbs	540 lbs.

Made & tested by Mannesmann & Co. England.

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



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## EVAPORATORS.

No. *One* Type *Vertical* Tons per Day *10*  
 Makers *St. G. Weir Glasgow.*  
 Working Pressure *180* Test Pressure *360* Date of Test  
 Date of Test of Safety Valves under Steam *20-10-21.*

## FEED WATER HEATERS.

No. *One* Type *Direct Contact*  
 Makers *Clarke Chapman*  
 Working Pressure Test Pressure Date of Test

## FEED WATER FILTERS.

No. *Two* Type *Granulation* Size *2'6" x 1'3" x 1'3"*  
 Makers *Caledon S & E Coy Dundee.*  
 Working Pressure *-* Test Pressure *-* Date of Test *-*

## LIST OF DONKEY PUMPS.

Main Feed Pumps One Pair *7 1/2" x 5 1/2" x 15"*  
 General Service Pump Two (Duplex) *6" x 4 1/4" x 6"*  
 Ballast Pump One (Duplex) *8" x 8" x 8"*  
 Fresh Water Pump One (Duplex) *4" x 2 3/4" x 5"*  
 Oil pumps in duplicate. Wallcut Howden.



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## SPARE GEAR

No. of Top End Bolts.	4	No. of Bot. End Bolts.	4	No. of Cylinder Cover Studs	-
" Coupling Bolts	12	" Main Bearing Bolts	2	" Valve Chest "	-
" Junk Ring Bolts	6	" Feed Pump Valves	One	" Bilge Pump Valves	One
" H.P. Piston Rings	One	" L.P. Piston Rings	One	" L.P. Piston Rings	One
" " Springs	"	" " Springs	"	" " Springs	"
" Safety Valve "	2	" Fire Bars	18	" Feed Check Valves	2
" Piston Rods	-	" Connecting Rods	-	" Valve Spindles	-
" Air Pump Rods	One	" Air Pump Buckets	-	" Air Pump Valves	2 Sets
" Cir. "	-	" Cir. "	-	" Cir. "	-
" Crank Shafts	-	" Crank Pin Bushes	2	" Crosshead Bushes	2
" Propeller Shafts	-	" Propellers	2	" Propeller Blades	-
" Boiler Tubes	6	" Condenser Tubes	50	" Condenser Ferrules	50

## OTHER ARTICLES OF SPARE GEAR:-

4 Boiler Fuel Stoppers / Eccentric Strap Complete.  
 1 Air Pump Head Valve Complete 100 Bolts & Nuts assorted  
 2 H.P. Piston Valves, Shuttle Valve for Feed Pump.  
 United States Metallic Packing Set for H.P. Piston Rod  
 " " " " " " L.P. " "  
 " " " " " " Value Spindles  
 1 Set Piston Rings for Feed Pump.  
 1 " Elcorite " " "  
 1 Sust & Delivery Valve with Seats Complete  
 1 Set Piston Rings for General Service Pump.  
 1 Sust & Delivery Valve for " " "  
 1 Set Piston Rings for Circulating Pump.  
 1 Top & Bottom End Brasses  
 1 Set Piston Rings for Fan Eng.  
 1 Top & Bottom End Brasses for Fan Eng.

1 Piston Rod for Fan Eng.  
 1 Set Piston Rings for Oil Fuel Pump.  
 1 Sust & Delivery Valve with Seat  
 Oil Fuel Fittings 3 Burner Pipes  
 3 " Carriers  
 3 " Values  
 6 Blind Flanges for Oil Fuel Pipes  
 12 ~~Big~~ Nozzles & Diaphragms (6 each)



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ADJUST TO BE USED

## ELECTRIC LIGHTING.

Installation Fitted by *Messrs. W.C. Martin & Co. Glasgow.*  
 No. and Description of Dynamos *One Compound Wound dynamo.*  
 Makers of Dynamos *Messrs. W.H. Allen & Sons*  
 Capacity .. *170* Amperes, at *100* Volts, *250* Revols. per Min.  
 Current Alternating or Continuous *Continuous*  
 Single or Double Wire System *Double.*  
 Position of Dynamos *Starling Platform*  
 .. Main Switch Board *Beside Dynamo.*  
 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.
Engine & Boiler Room.	24	16	13.4	7/052	916.	100% 2500 negs.	
Midships Fore.	23	16	12.9	7/064	582.		
Midships Aft.	31	16	17.4	7/052	1260.		
Ironworks Deck.	23	16	12.9	7/052	888		
Navigation	8	32 & 8	6.3	7/052	430		
Cargo	21	16	11.8	7/052	807.		
Account's Aft.	27	32 & 16 & 8	15.1	7/064	682		
Upper Deck.	44	32 & 16	25.2	7/064	1183		

Total No. of Lights *201* No. of Motors driving Fans, &c. *3* No. of HeatersCurrent required for Motors and Heaters *19.6 Amps.*

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

*Just* Forecastle 6 Way.  
 Captain's Room 8 Way, Outside Pantry 9 Way.  
 Engine Room 6 Way, Eng. Casings 8 Way.  
 Steering Gear House 1-2 Way 1-4 Way & 1-8 Way.  
 Eng. Room 6 Way. 2<sup>nd</sup> Class Aft 6 Way.  
 Engineer Mess 4 Way.

Are Out-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

On Aux. *Just*, 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 Size?

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. *16* S.W.G., Largest, No. *37* S.W.G.

How are Conductors in Engine and Boiler Spaces protected?

Saloons, State Rooms, &c.,

What special protection is provided in the following cases?

(1) Conductors exposed to Heat or Damp

(2) " passing through Bunkers or Cargo Spaces

(3) " " Deck Beams or Bulkheads

*Lead Covering & Steel Armour.*  
*Lead Covering & Steel Armour.*  
*Rustproof Holes & W.T. Glands*

Are all Joints in Cables properly soldered and thoroughly Insulated so that the efficiency of the Cables is unimpaired? *No Joints Except on Terminals in Joint Boxes*

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?

*600,000* Ohms.

Is the Installation supplied with a Voltmeter?

" " " an Ampere Meter?

Date of Trial of complete Installation *20-10-21* Duration of Trial *6 hours.*



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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 (With Exception of Natural Draught)*

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

Surveyor.

*Boilers now fitted with Howdens forced draught. Safety Valves increased from 2 1/2 to 3" diameter*

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.

*KELANTAN.*

as ascertained by me from personal examination

*In order*

*J. H. Laurie,*  
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,

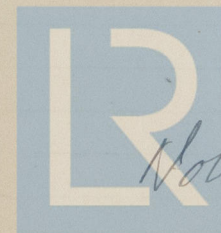
*J. H. Laurie*  
Chief Surveyor.

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

*23<sup>rd</sup> Nov 1921*

Fees advised

Fees paid



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Secretary.



## GENERAL CONSTRUCTION

-2001

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

22-10-20

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

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

22-10-20

## VISITS PAID DURING CONSTRUCTION.

21-1-20	4-8-20	10-3-21
27-1-20	10-8-20	10-5-21
3-2-20	25-8-20	12-5-21
11-2-20	15-8-20	26-5-21
24-2-20	22-9-20	22-6-21
4-3-20	28-9-20	26-8-21
9-3-20	30-9-20	26-8-21
18-3-20	5-10-20	14-9-21
23-3-20	14-10-20	22-9-21
31-3-20	19-10-20	29-9-21
14-4-20	28-10-20	7-10-21
29-4-20	1-11-20	19-10-21
1-6-20	30-11-20	20-10-21
8-6-20	7-12-20	3-11-21
10-6-20	28-12-20	
17-6-20	18-1-21	
22-6-20	1-2-21	
30-6-20	15-2-21	

TOTAL 50 Visits Paid.



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# Visit Paid During Construction

21-7-20	21-8-20	10-9-20
22-7-20	22-8-20	11-9-20
23-7-20	23-8-20	12-9-20
24-7-20	24-8-20	13-9-20
25-7-20	25-8-20	14-9-20
26-7-20	26-8-20	15-9-20
27-7-20	27-8-20	16-9-20
28-7-20	28-8-20	17-9-20
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30-7-20	30-8-20	19-9-20
31-7-20	31-8-20	20-9-20
1-8-20	2-8-20	21-9-20
2-8-20	3-8-20	22-9-20
3-8-20	4-8-20	23-9-20
4-8-20	5-8-20	24-9-20
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12-8-20	13-8-20	2-10-20
13-8-20	14-8-20	3-10-20
14-8-20	15-8-20	4-10-20
15-8-20	16-8-20	5-10-20
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12-11-22	1-12-22	6-11-22
1-12-22	2-12-22	7-11-22
2-12-22	3-12-22	8-11-22
3-12-22	4-12-22	9-11-22
4-12-22	5-12-22	10-11-22
5-12-22	6-12-22	11-11-22
6-12-22	7-12-22	12-11-22
7-12-22	8-12-22	1-12-22
8-12-22	9-12-22	2-12-22
9-12-22	10-12-22	3-12-22
10-12-22	11-12-22	4-12-22
11-12-22	12-12-22	5-12-22
12-12-22	1-1-23	6-12-22
1-1-23	2-1-23	7-12-22
2-1-23	3-1-23	8-12-22
3-1-23	4-1-23	9-12-22
4-1-23	5-1-23	10-12-22
5-1-23	6-1-23	11-12-22
6-1-23	7-1-23	12-1





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