

Smidland Surveyors

No. 1976 **TRANSFERRED TO** 6/10/41
L. R. SYSTEM

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. *1498* No. in Register Book *3096*

" MARINELLA *"*

" IMPERIAL VALLEY *"*

S.S. *BUCHANNESS*

Makers of Engines *Workman, Clark & Co Ltd*

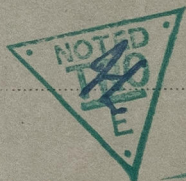
Works No. *443*

Makers of Main Boilers *Workman, Clark & Co Ltd*

Works No. *443*

Makers of Donkey Boiler *—*

Works No. *—*



MACHINERY.

Alterations pp 2 & 34

Blyth 12/51



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004300-004307-0091

No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. No. in Register Book

Received at Head Office. *6th January 1925*

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

"BUCHANNESS"

Official No.

Port of Registry *Bideford*

Registered Owners

Sir William Reardon Smith
and Sons Ltd

Engines Built by

Workman Clark & Co Ltd

at

Belfast

Main Boilers Built by

Workman Clark & Co Ltd

at

Belfast

Donkey ..

at

Date of Completion

4/11/24

First Visit

24/4/24

Last Visit

4/11/24

Total Visits

62

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RECIPROCATING ENGINES.

Works No. *473* No. of Sets *1* Description *Inverted cylinder triple expansion, surface condensing reciprocating steam engine*

No. of Cylinders each Engine *3* No. of Cranks *3*

Diams. of Cylinders *26", 42" and 41"* Stroke *48"*

Cubic feet in each L.P. Cylinder *110.0*

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

" " " each Receiver? *Yes.*

Type of H.P. Valves, *Piston valve (inside steam)*

" 1st I.P., *Andrews & Cameron*

" 2nd I.P., *—*

" L.P. " *Double-ported D slide valve.*

" Valve Gear *Stephenson's Link motion.*

" Condenser *Surface* Cooling Surface *2,300* sq. ft.

Diameter of Piston Rods (plain part) *4"* Screwed part (bottom of thread) *4 1/16"*

Material " *Steel with Iron nuts.*

Diam. of Connecting Rods (smallest part) *4"* Material *S.H. Steel*

" Crosshead Gudgeons *4"* Length of Bearing *2@4"* Material *S.H. Steel*

No. of Crosshead Bolts (each) *4* Diam. over Thrd. *3"* Thrds. per inch *4 1/2* Material *Steel*

" Crank Pin " *2* " *4"* " *4* " *Steel*

" Main Bearings *6* Lengths *5@14 1/2" 1@14"*

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

* " Holding Down Bolts, each Engine *121* Diam. *1 3/8"* No. of Metal Checks *82* *

Are the Engines bolted to the Tank Top or to a Built Seat? *Tank Top.* *124*

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

If not, how are they fitted? *—*

* Including *4" corner* chocks.

* *13 by 12/41*

Connecting Rods, Forged by *Fried Krupp Essen*

Piston " " *Workman, Clarke & Co Ltd*

Crossheads, *Fried Krupp Essen*

Connecting Rods, Finished by *Workman, Clarke & Co Ltd*

Piston " " *—*

Crossheads, " " *—*

Date of Harbour Trial *28/10/24*

" Trial Trip *4/11/24*

Trials run at *Belfast Lough*

Were the Engines tested to full power under Sea-going conditions? *Not full power **

If so, what was the I.H.P.? *Revs. per min. 43*

Pressure in 1st I.P. Receiver, *44* lbs., 2nd I.P., *—* lbs., L.P., *5* lbs., Vacuum, *27.5* ins.

Speed on Trial *10.78*

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

data:—

Builders' estimated I.H.P. *2300*

Revs. per min.

Estimated Speed

* Due to the absence of white metal pads on guide shoes (see Owners' Specification) it was found impossible to open the engines full out, on account of overheating the guides. This trouble will not be experienced when a 'skin' has been worked on the surfaces. Since the trial trip, gutters have been cut in the shoes, and additional lubrication provided for, from the centre of guides.

TURBINE ENGINES.

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

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

Is Single or Double Reduction Gear employed?

Diam. of 1st Reduction Pinion

" 1st " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

" 2nd " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

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

S.H.P.

" " 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

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

DESCRIPTION OF INSTALLATION.

No. of Turbo-Generating Sets
 Type of Turbines employed
 Description of Generator

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?

Diam. of 1st Reduction Pinion
 " 1st " Wheel
 Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion
 " 2nd " Wheel
 Estimated Pressure per lineal inch

Revs. per min. of Generator at Full Power
 " Motors
 " 1st Reduction Shaft

" 2nd " "
 " Propeller Shaft 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.



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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.

SHAFTING.

Are the Crank Shafts Built or Solid? *Built*No. of Lengths in each *3*

Angle of Cranks

120°

Diar. by Rule

13 3/4 " Actual*13 3/4* "

In Way of Webs

14 3/4 "

" of Crank Pins

14 "

Length between Webs

15 3/4 "

Greatest Width of Crank Webs

24 1/2 "

Thickness

8 5/8 "

Least " "

20 1/2 "

"

8 7/8 "Diar. of *Bowls* in Crank Webs*2 1/2* "

Length

4 "

" Dowels in Crank Pins

1 3/4 " Length*6* "

Screwed or Plain

Plain

No. of Bolts each Coupling

6

Diar. at Mid Length

3 1/4 "

Diar. of Pitch Circle

20 3/4 "

Greatest Distance from Edge of Main Bearing to Crank Web

about 1/4 "

Type of Thrust Blocks

Michel

No. " Rings

Two sets of pads.

Diar. of Thrust Shafts at bottom of Collars

13 3/4 "

No. of Collars

1

" " Forward Coupling

13 3/4 "

At Aft Coupling

13 3/4 "*13 1/2* " at Bearings

Diar. of Intermediate Shafting by Rule

12.76 " Actual*13 1/4* "

No. of Lengths

7

No. of Bolts, each Coupling

6

Diar. at Mid Length

3 1/4 "

Diar. of Pitch Circle

20 3/4 "

Diar. of Propeller Shafts by Rule

14.78 " Actual*15* "

At Couplings

14 1/4 "

Are Propeller Shafts fitted with Continuous Brass Liners?

Yes.

Diar. over Liners

16 3/8 " Ford *16 1/2* " Aft

Length of After Bearings

5'-0"

Of what Material are the After Bearings composed?

Legnum Vitae

Are Means provided for lubricating the After Bearings with Oil?

No

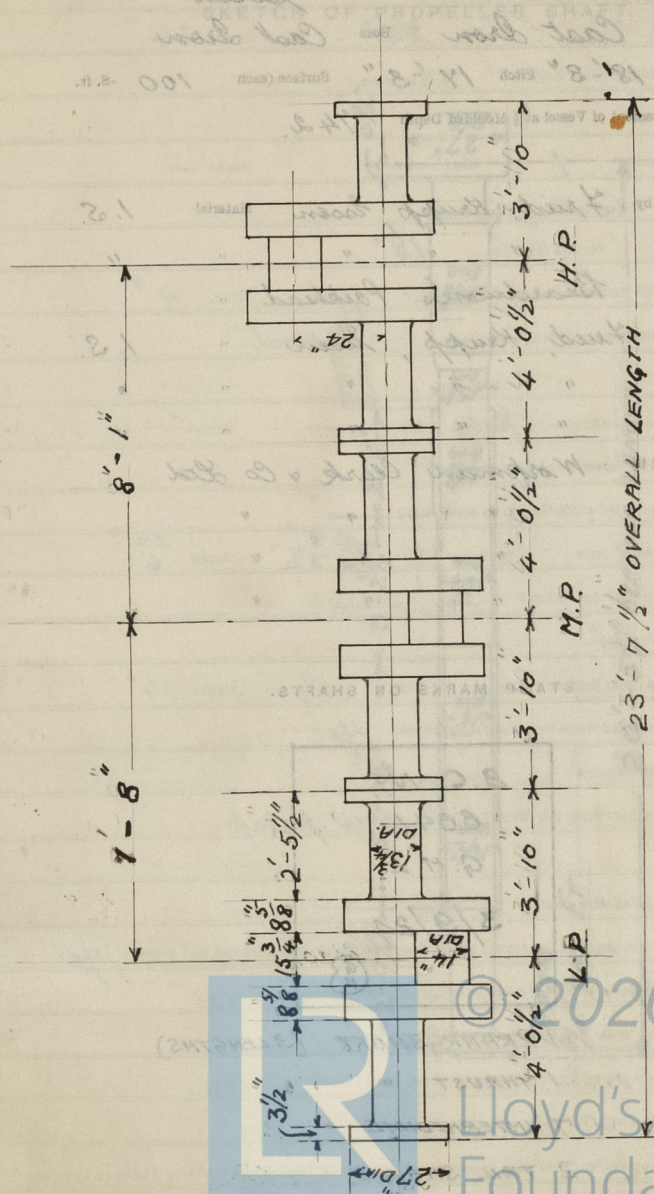
" " to prevent Sea Water entering the Stern Tubes?

No

If so, what Type is adopted?

Sea-water lubrication.

SKETCH OF CRANK SHAFT.



Cast Iron

Boggs

Cast Iron

18'-3" Pitch

Pitch 14'-3"

Surface (each

100

S. ft.

of Vessel at $\frac{4}{5}$ Moulded Depth

742

Fried. Krupp, Essen

Material

105

„ Pins „

" Webs

Beardmore's Parkhead

Thrust Shafts

Med Krupp Essen

12

1.5

Intermed.,,

Propeller „

Crank .. Finished by

Workman Clark & Co Ltd

Thrust "

Intermed. ,,

Propeller „

STAMP MARKS ON SHAFTS.

B.C. No

6641

G. M. L.

3/9/24

GM

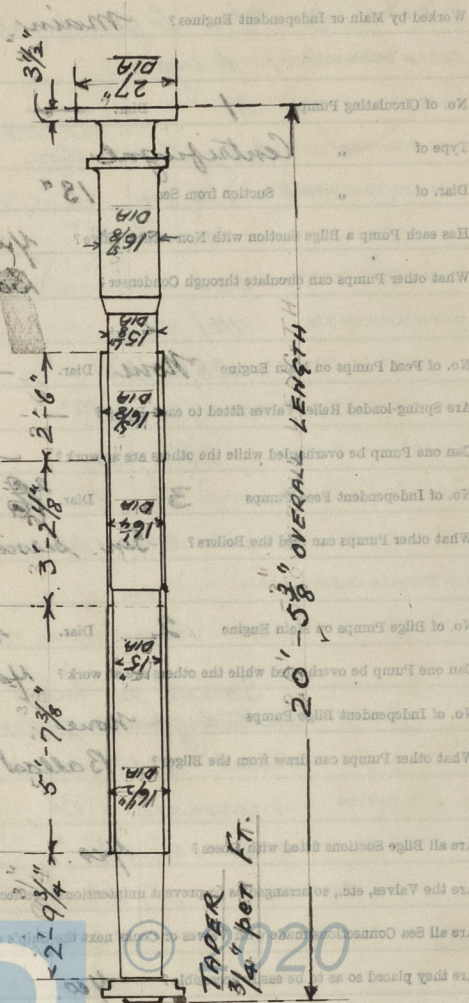
1 CRANK SHAFT (3 LENGTHS)

1 THRUST "

7 INTERMEDIATE "

2 TAIL SHAFTS

SKETCH OF PROPELLER SHAFT



TAPER

3 1/4" per FT.

PUMPS, ETC.

No. of Air Pumps *1* Diar. *25"* Stroke *24"*

Worked by Main or Independent Engines? *Main*

No. of Circulating Pumps *1* Diar. *—* Stroke *—*

Type of " *Centrifugal*

Diar. of " Suction from Sea *13"*

Has each Pump a Bilge Suction with Non-return Valve? *Yes* Diar. *9"*

What other Pumps can circulate through Condenser? *Ballast*

No. of Feed Pumps on Main Engine *None* Diar. *—* Stroke *—*

Are Spring-loaded Relief Valves fitted to each Pump? *—*

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

No. of Independent Feed Pumps *3* Diar. *20 8 1/2"* Stroke *22 6"*

What other Pumps can feed the Boilers? *Gen. Service*

No. of Bilge Pumps on Main Engine *2* Diar. *4 1/4"* Stroke *24"*

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

No. of Independent Bilge Pumps *None*

What other Pumps can draw from the Bilges? *Ballast pump*

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? *Above*

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

No. of Boilers *3*

Type of Boilers *3*

Single or Double ended *3*

No. of Furnaces in each *3*

Type of Furnaces *3*

Date when Plan approved *8/4/24*

Approved Working Pressure *180 lbs*

Hydraulic Test Pressure *220 lbs*

Date of Hydraulic Test *12/9/24*

When Safety Valves set *28/10/24*

Pressure at which Valves were set *180 lbs*

Date of Accumulation Test *28/10/24*

Maximum Pressure under Accumulation Test *180 lbs*

System of Drafting *(See on page 11)*

Can Valves be worked separately? *Yes*

Material of Boilers *Iron*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

Can they be worked separately? *Yes*

BOILERS.

Works No. **473.**

No. of Boilers **3** Type **Cylindrical return tube.**

Single or Double-ended **Single**

No. of Furnaces in each **3.**

Type of Furnaces **Brighton Section corrugated.**

Date when Plan approved **8/4/24.**

Approved Working Pressure **180 lbs/p"**

Hydraulic Test Pressure **320 "**

Date of Hydraulic Test **12/9/24.**

" when Safety Valves set **28/10/24**

Pressure at which Valves were set **185 lbs/p"**

Date of Accumulation Test **28/10/24**

Maximum Pressure under Accumulation Test **185 lbs/p"**

System of Draught **natural (for coal or oil)**

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

Makers of Plates **Wm Beardmore & Co Ltd**

" Stay Bars **Societe des Forges & Acieries de Dilling**
Guthhoffnungshutte, Oberhausen.

" Rivets **Rivet, bolt & nut Co**

" Furnaces **Marshall & Co, Motherwell**

Greatest Internal Diam. of Boilers **16'-0 3/8"**

" " Length " **11'-6"**

Square Feet of Heating Surface each Boiler **2682.**

" " Grate " " **734, altered to 705**

No. of Safety Valves each Boiler **2.** Rule Diam. **2.953"** Actual **3" H.L.**

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

No. of Pressure Gauges, each Boiler **1** No. of Water Gauges **2**

" Test Cocks " **—** " Salinometer Cocks **1**

Waste pipe each Boiler **4 1/2" diam.** Main **8" diam.**

B.C. TEST

No 3928

TEST PRESS. 320 lbs

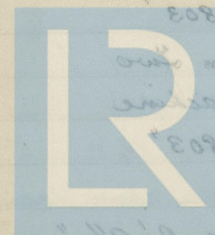
W.P. 180 "

J.M.K.

12.9.24

MARK ON BOILERS.

Dilling, Sarre.



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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? *direct*

Are these Pipes connected to Boilers by Cocks or Valves? *Valves*

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

No. of Strakes of Shell Plating in each Boiler *One*

Plates in each Strake *Two*

Thickness of Shell Plates Approved *1 5/16"*

in Boilers *1 3/8" & 1 1/16"*

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 *1"*

inside *1 1/8"*

Are Longitudinal Seams Hand or Machine Riveted? *Machine*

Are they Single, Double, or Treble Riveted? *Treble*

No. of Rivets in a Pitch *5*

Diar. of Rivet Holes *1 5/16"*

Pitch

9 1/4"

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 *Two*

Are these Seams Hand or Machine riveted? *Hand*

Diar. of Rivet Holes *1 5/16"*

Pitch

3.803"

No. of Rows of Rivets in Back End Circumferential Seams *Two*

Are these Seams Hand or Machine Riveted? *Machine*

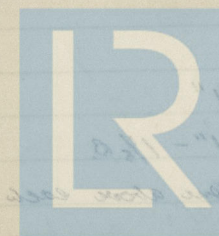
Diar. of Rivet Holes *1 5/16"*

Pitch

3.803"

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

Dimensions of Compensating Rings *2-11 1/4" x 2-9 1/4"*



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Thickness of End Plates in Steam Space Approved

 $1\frac{9}{32}$ "

" " " " " in Boilers

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

Pitch of Steam Space Stays

See Sketch

Diar. " " " " Approved

 $3\frac{1}{2}$ "

Threads per Inch 6

" " " " " in Boilers

 $3\frac{1}{2}$ "

6

Material of " " "

Steel

How are Stays Secured?

Nuts inside & outside with thin washers.

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

 $\frac{7}{8}$ "

Thickness of Doublings in Wide Spaces between Fireboxes

—

Pitch of Stays at

 $14\frac{1}{4}$ " x $8\frac{1}{2}$ "

Diar. of Stays Approved

 $1\frac{7}{8}$, $1\frac{3}{4}$, $1\frac{1}{8}$ "

Threads per Inch 9

" " in Boilers

 $1\frac{7}{8}$ top corner, $1\frac{3}{4}$ marg. $1\frac{1}{8}$ centre.

Material "

Steel

Are Stays fitted with Nuts outside?

Yes.

Thickness of Back End Plates at Bottom Approved

 $\frac{7}{8}$ "

" " " " " in Boilers

 $\frac{7}{8}$ + $\frac{1}{32}$ "

Pitch of Stays at Wide Spaces between Fireboxes

 $14\frac{1}{4}$ to 17 " x $8\frac{1}{2}$ "

Thickness of Doublings in

—

Thickness of Front End Plates at Bottom Approved

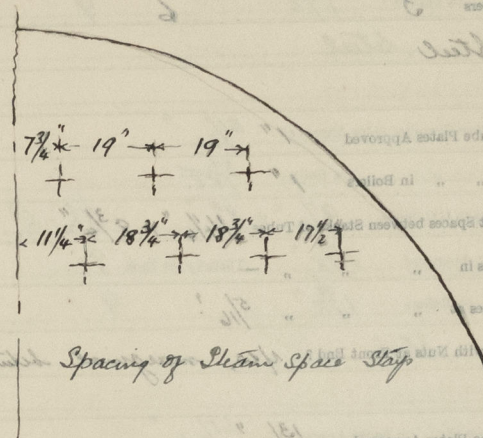
1"

" " " " " in Boilers

1" - $1\frac{1}{8}$ " B.

No. of Longitudinal Stays in Spaces between Furnaces

One above each manhole.



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Diar. of Stays Approved $3''$ Threads per Inch 6

" " in Boilers $3''$ 6

Material " *Steel*

Thickness of Front Tube Plates Approved $1''$

" " " " in Boilers $1''$

Pitch of Stay Tubes at Spaces between Stacks of Tubes $14\frac{1}{4}'' \times 8\frac{3}{4}''$

Thickness of Doublings in " " " —

" Stay Tubes at " " " $5\frac{1}{16}''$

Are Stay Tubes fitted with Nuts at Front End? *Yes, marginal between stacks*

Thickness of Back Tube Plates Approved $13\frac{1}{16}''$

" " " in Boilers $13\frac{1}{16}''$

Pitch of Stay Tubes in Back Tube Plates $13\frac{1}{2}'' \times 8\frac{3}{4}''$

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

Thickness of Stay Tubes $5\frac{1}{16}''$

" Plain " 8 w.g.

External Diar. of Tubes $3\frac{1}{4}''$ Swelled $\frac{1}{16}''$ at front end.

Material " *Woot Iron.*

Thickness of Furnace Plates Approved $19\frac{1}{32}''$

" " " in Boilers $19\frac{1}{32}''$

Smallest outside Diar. of Furnaces $44\frac{3}{32}''$

Length between Tube Plates $4'-3''$

Width of Combustion Chambers (Front to Back) $3'-3''$

Thickness of " " Tops Approved $2\frac{1}{32}''$

" " " in Boilers $5\frac{1}{8}''$

Pitch of Screwed Stays in C.O. Tops $8\frac{1}{2}'' \times 8\frac{3}{4}''$, Centre tops $7\frac{1}{2}'' \times 8\frac{1}{2}''$

Diar. of Screwed Stays Approved $1\frac{1}{2}''$ Threads per Inch 6

" " " in Boilers " " " " " " " "

Material " *Steel*

Thickness of Combustion Chamber Sides Approved $4\frac{1}{2}''$

" " " in Boilers " " " " " " " "

Pitch of Screwed Stays in C.O. Sides $9\frac{1}{4}'' \times 8\frac{1}{2}''$

Diar. " " " Approved $1\frac{1}{2}''$ Threads per Inch 6

" " " in Boilers " " " " " " " "

Material " *Steel*

Thickness of Combustion Chamber Backs Approved $4\frac{1}{2}''$

" " " in Boilers " " " " " " " "

Pitch of Screwed Stays in C.O. Backs $8\frac{1}{2}'' \times 8\frac{1}{2}''$

Diar. " " " Approved $1\frac{1}{2}''$ Threads per Inch 6

" " " in Boilers " " " " " " " "

Material " *Steel*

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

Thickness of Combustion Chamber Bottoms $3\frac{1}{4}''$

No. of Girders over each Woke Chamber 3

" " " Centre " " " " " " " "

Depth and Thickness of Girders $3\frac{1}{2}'' \times 10''$ deep

Material of Girders *Steel*

No. of Stays in each 3



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Diam. of Screwed Stays Approved $1\frac{5}{8}"$ Threads per Inch 9
 " " " in Boilers $1\frac{5}{8}"$ 9
 Material " " Steel

Thickness of Combustion Chamber Sides Approved $2\frac{1}{32}"$
 " " " in Boilers $5/8"$
 Pitch of Screwed Stays in C.O. Sides $9\frac{1}{4}" \times 8\frac{1}{2}"$ $8\frac{1}{2}" \times 8\frac{1}{2}"$ centre boxes.
 Diam. " " Approved $1\frac{5}{8}"$ Threads per Inch 9
 " " " in Boilers $1\frac{5}{8}"$ 9
 Material " " Steel

Thickness of Combustion Chamber Backs Approved $4\frac{1}{64}"$
 " " " in Boilers $4\frac{2}{64}"$
 Pitch of Screwed Stays in C.O. Backs $8\frac{1}{2}" \times 8\frac{1}{4}"$
 Diam. " " Approved $1\frac{7}{8}, 1\frac{3}{4}, 1\frac{1}{8}"$ Threads per Inch 9
 " " " in Boilers $1\frac{7}{8}, 1\frac{3}{4}, 1\frac{1}{8}"$ 9
 Material " " Steel

Are all Screwed Stays fitted with Nuts inside C.O.? Yes.
 Thickness of Combustion Chamber Bottoms $3\frac{1}{4}"$

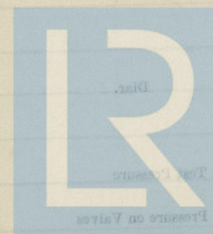
No. of Girders over each Wing Chamber 5
 " " " Centre " 3
 Depth and Thickness of Girders Double $3\frac{1}{4}"$ plate + 10" deep.
 Material of Girders Steel
 No. of Stays in each 3

No. of Tubes, each Boiler 348.
 Size of Lower Manholes $16" \times 12"$

VERTICAL DONKEY BOILERS

No. of Boilers
 Type
 Height
 Greatest Lat. Dist.
 Height of Boiler Crown above Fire Grate
 Are Boiler Crowns Flat or Dished?
 External Radius of Dished Crowns
 Thickness of Plates
 Description of Beams in Boiler Crowns
 Width of Grating
 Diam. of Rivet Holes
 Height of Firebox Crown above Fire Grate
 Are Firebox Crowns Flat or Dished?
 External Radius of Dished Crowns
 No. of Crown Stays
 Material
 Thickness of Plates
 External Diam. of Firebox at Top
 No. of Water Tubes
 Material of Water Tubes
 Size of Manhole in Shell
 Dimensions of Compressing Ring
 Heating Surface, each Boiler

SUPERHEATERS



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VERTICAL DONKEY BOILERS.

No. of Boilers *178* Type *9*

Greatest Int. Diar. *54"* Height

Height of Boiler Crown above Fire Grate

Are Boiler Crowns Flat or Dished? *2 1/2"*

Internal Radius of Dished Ends *2 1/2"* Thickness of Plates *3/4"*

Description of Seams in Boiler Crowns *Seamed*

How are Flanges secured? *Seamed*

Date of Hydraulic Test *8/1/14*

Test Pressure *200 lbs*

Diar. of Rivet Holes *1/4"* Pitch *2 1/2"* Width of Overlap *2 1/2"*

Height of Firebox Crowns above Fire Grate *9*

Are Firebox Crowns Flat or Dished? *fitted*

External Radius of Dished Crowns *None* Thickness of Plates

No. of Crown Stays *44* Diar. *4 1/2"* Material

External Diar. of Firebox at Top *24"* Bottom *24"* Thickness of Plates

No. of Water Tubes *86* Ext. Diar. *2 1/2"* Thickness

Material of Water Tubes

Size of Manhole in Shell *17 1/2" x 17"*

Dimensions of Compensating Ring *2 1/2"*

Heating Surface, each Boiler *400* Grate Surface

SUPERHEATERS.

Description of Superheaters

Where situated? *3*Which Boilers are connected to Superheaters? *plates - 10" deep*Can Superheaters be shut off while Boilers are working? *fitted*No. of Safety Valves on each Superheater *None* Diar.

Are " " fitted with Easing Gear?

Date of Hydraulic Test *3/1/14*

Test Pressure

Date when Safety Valves set *3/1/14*

Pressure on Valves

MAIN STEAM PIPES

No. of Pipes	Material	Radius, Welded or Seamed	Internal Diar.	Thickness	How are Flanges secured?	Date of Hydraulic Test	Test Pressure
2	Steel	2 1/2"	2"	1/4"	Seamed	8/1/14	200 lbs
2	Steel	2 1/2"	2"	1/4"	Seamed	8/1/14	200 lbs
1	Steel	2 1/2"	2"	1/4"	Seamed	8/1/14	200 lbs
3	Steel	2 1/2"	2"	1/4"	Seamed	8/1/14	200 lbs



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MAIN STEAM PIPES.

No. of Lengths	3	1	2	2
Material	Steel	Steel	Steel	Steel
Brazed, Welded or Seamless	S. D.	S. D.	S. D.	S. D.
Internal Diar.	5"	5"	3 1/2"	3 1/2"
Thickness	1/4"	1/4"	1/4"	1/4"
How are Flanges secured?	Screwed	Screwed	Screwed	Screwed
Date of Hydraulic Test	7/7/24	9/2/24	9/7/24	25/7/24
Test Pressure	600 lbs.	600 lbs.	600 lbs.	600 lbs.

No. of Lengths	2
Material	Steel
Brazed, Welded or Seamless	S. D.
Internal Diar.	5"
Thickness	1/4"
How are Flanges secured?	Screwed
Date of Hydraulic Test	4/8/24
Test Pressure	600 lbs.

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



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EVAPORATORS.

No. 1 Type Weirs' 35 Tons per Day
 Makers G. & J. Weir Ltd Cathcart
 Working Pressure 15 Test Pressure 30 shell 590 coils Date of Test 29.8.24.
 Date of Test of Safety Valves under Steam 28/10/24.

FEED WATER HEATERS.

No. 1 Type Direct Contact (No 75328)
 Makers G. & J. Weir Ltd Cathcart
 Working Pressure 20 Test Pressure 40 Date of Test 20.8.24.

FEED WATER FILTERS.

No. 1 Type High Pressure Size
 Makers Kureauldy & Co
 Working Pressure 180 Test Pressure 400 Date of Test 26/9/24.

LIST OF DONKEY PUMPS.

Harbour Pump. Thom Lamont
 Suctions: - Sea, control tank, Hotwell.
 Discharge: - Main & aux feed range, heater.

Large Harbour Pump. Thom Lamont.
 Suctions: - Control tank, sea, condenser.
 Discharge: - Sanitary, overboard, boiler feed.

Aux circulating & General Service Pump Thom Lamont.
 Suctions: - Sea, ballast.
 Discharge: - Aux condenser, Sanitary range, overboard.

Ballast & Bilge Pump. Thom Lamont.
 Suction: - Sea, tanks, bilge main, bilge disch.
 Discharge: - main cond^r, overboard, aux cond^r
 sanitary



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SPARE GEAR

No. of Top End Bolts.	2.	No. of Bot. End Bolts.	2.	No. of Cylinder Cover Studs	3 @ 1 1/2"
" Coupling Bolts	6	" Main Bearing Bolts	2	" Valve Chest	6 @ 1 3/8"
" Junk Ring Bolts	12	" Feed Pump Valves	2 main 2 aux	" Bilge Pump Valves	1 set suction 1" bulk
" H.P. Piston Rings	—	" I.P. Piston Rings	—	" L.P. Piston Rings	—
" " Springs	—	" " Springs	—	" " Springs	—
" Safety Valve	2	" Fire Bars	1 Full Set	" Feed Check Valves	2 main 2 aux
" Piston Rods	—	" Connecting Rods	—	" Valve Spindles	—
" Air Pump Rods	—	" Air Pump Buckets	—	" Air Pump Valves	6 Sets.
" Cir. " 1 Impeller " & shaft	—	" Cir. " —	—	" Cir. " —	—
" Crank Shafts	—	" Crank Pin Bushes	1 pair	" Crosshead Bushes	—
" Propeller Shafts	1	" Propellers	1 Solid	" Propeller Blades	—
" Boiler Tubes	6	" Condenser Tubes	6	" Condenser Ferrules	100

OTHER ARTICLES OF SPARE GEAR:—

Main Feed pumps (Weirs)

1 set suction valves

" discharge "

" piston rings

" bucket rings

Ballast & Harbour Feed pumps.

1 set suction valves

" discharge "

" piston rings

Any circulating & General Service Pump

1 set piston rings.

Oil Fuel Plant.

1 Suction & 1 discharge strainer basket

2 set thermometers

3 White's Patent Burners complete.

3 burner tips for each burner

" supply valves & 3 pipes

6 burner springs

3 Flame Controls

3 Jacket tubes

1/2 set of group valves & springs for 1 pump

1" steam piston rings for 1 pump

1" oil " " " "

Oil Fuel Transfer Pump.

4 m.s. ring valves

30 monel springs

4 - 6 1/2" C.I. piston rings

" 7" C.I. bucket "



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REFRIGERATORS.

No. of Machines Capacity of each
 Makers
 Description
 No. of Steam Cylinders, each Machine No. of Compressors No. of Cranks
 Particulars of Pumps in connection with Refrigerating Plant and whether worked by Refrigerating Machines or Independently

not fitted

System of Refrigeration

Insulation

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

Spaces?

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

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

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

Date of Test under Working Conditions

6th Feb 1901.
1 Section & 1 discharge steam bucket
2 set thermometer
3 White Patent Russian compound.

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.
Machine of Dynamometer				
Capacity	114	110	30	
Corrected Air Pressure				
Height of Double Pipe				
Position of Dynamometer				
Main Section Board				
No. of Circuits to which tested				
Particulars of Charge				
Weight of Charge				
Weight of Air				
Heat Space	32	16	176	176
2nd Room	21	20	176	176
3rd Room	21	20	176	176
4th Room	21	20	176	176
5th Room	21	20	176	176
6th Room	21	20	176	176
7th Room	21	20	176	176
8th Room	21	20	176	176
9th Room	21	20	176	176
10th Room	21	20	176	176

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



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Time required to obtain this result.	Temp. at beginning of trial.	Temp. at end of trial.	COMPARATIVE

*Extra (new) Generator fitted by
Admiralty at Blyth 12/41.*

Installed by Blyth S. D. & S. B. Co

*One Compound wound multipolar dynamo
made by W. H. Allen Bedford
Capacity 91 amp 110 volts @ 550 r.p.m.*

Engine

*Single cylinder enclosed forced lubric
driven by steam coupled direct.*

*Switch board altered & added to, enabling
either machine to take lighting or
degaussing or both.*

ELECTRIC LIGHTING.

Installation Fitted by *Sunderland Forge & Eng. Co Ltd*
No. and Description of Dynamos *One Compound Wound Multipolar Dynamo.*
Makers of Dynamos *Sunderland Forge & Eng. Co Ltd*
Capacity " *114* Amperes, at *110* Volts, *320* Revols. per Min.
Current Alternating or Continuous *Continuous*
Single or Double Wire System *Double*
Position of Dynamo *Engine Room.*
Main Switch Board *Reside Dynamo.*
No. of Circuits to which Switches are provided on Main Switch Board *6.*
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.
1. Mach. Spaces.	32	16	17.6	7/036	2514	100%	660 meg.
2. Amid. Accou.	21	20 Watt	4.92	7/036	703	"	"
3. W/TELEGRAPH	1	32 cp.	4.55	7/036	650	"	"
4. Navig. & 700	43	20 Watt	14.88	7/064	612	"	"
5. Cargo	6	32 cp.	9.09	7/036	1298	"	"
6. Eng. Workshop/Motor	10	200	—	—	—	"	"

Total No. of Lights *123* 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

CHART ROOM 7 switches

ENG. " 8 "

AMIDSHIP 3 "

FORD ACCON. 5 "

Are Out-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

Yes.

On Aux. " " each Auxiliary Circuit

Yes.

Wherever a Cable is reduced in size

Yes.

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 Out-outs constructed of Non-inflammable Material?

Yes.

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

Yes.

Smallest Single Wire used, No. ALL STRANDED S.W.G., Largest, No. ALL STRANDED S.W.G.

How are Conductors in Engine and Boiler Spaces protected? LEAD COVERED, ARMORED & BRAIDED

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

"

"

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp LEAD COVERED, ARMORED & BRAIDED

(2) " passing through Bunkers or Cargo Spaces

ON DECK.

(3) " " Deck Beams or Bulkheads

FIRE RESISTANT or W/T PROTECTING GLAZES.

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?

Approved

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

Approved

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?

1 meg.

Ohms.

Is the Installation supplied with a Voltmeter?

Yes

" " " an Ampere Meter?

Yes.

Date of Trial of complete Installation

4/11/24

Duration of Trial 6 hrs.

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

Yes.



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GENERAL CONSTRUCTION.

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

Approved Plans? *Yes.*

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

Surveyor. *Are the Dynamometer, Motor, Main and Branch Cables, so placed that the Chief*

affected by them?

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

Has the Installation Resistance over the whole system been tested?

What does the Resistance amount to?

Is the Installation equipped with a Voltmeter?

an Amperes Meter

Date of Trial of complete Installation

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

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.

"BUCHANNESS"

as ascertained by *me* from personal examination

Geo. M. Luke.
Engineer Surveyor to the British Corporation for the
Survey and Registry of Shipping.

Fees—

MAIN BOILERS.

	£	s.	d.
H.S. Sq. ft.	36	2	0

G.S.	"	:	:
------	---	---	---

DONKEY BOILERS.

H.S.	Sq. ft.	:	:
------	---------	---	---

G.S.	"	:	:
------	---	---	---

£	:	:
---	---	---

ENGINES.

L.P.O.	Cub. ft.	62	0	0
--------	----------	----	---	---

£	:	:
---	---	---

Testing, &c. ...	:	:
------------------	---	---

£	:	:
---	---	---

Expenses ...	:	:
--------------	---	---

Total ...	£	98	2	0
-----------	---	----	---	---

It is submitted that this Report be approved.

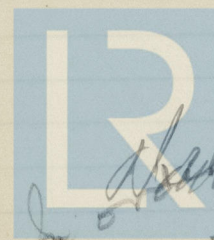
John King
Chief Surveyor.

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

18th March 1915

Fees advised

Fees paid



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Secretary.

Losses - Total in 1907

Losses - Total in 1907

Losses - Total in 1907

Losses - Total in 1907

Losses - Total in 1907

Losses - Total in 1907

Losses - Total in 1907

Losses - Total in 1907

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