

No. 2299

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 2269 No. in Register Book 3663

CLAYTON
" of "
S.S. Farrandoc.

Makers of Engines Swan Hunter & W.R. Ltd.

Works No. 1356.

Makers of Main Boilers Swan Hunter & W.R. Ltd.

Works No. 1356.

Makers of Donkey Boiler None

Works No. ✓

MACHINERY.



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No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
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Report No. No. in Register Book

Received at Head Office *24 February 1930*

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the *Single Triple* Screw Steamer "Sarrandoc".
Chain Quadruple

Official No. *161526* Port of Registry *Newcastle*

Registered Owners *Paterson Steamships, Ltd.*
Fort William, Ontario

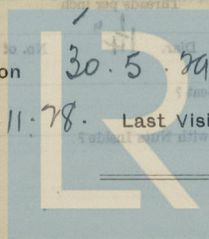
Engines Built by *Swan Hunter & W.R. Ltd.*
at *Walker, R. Tyne*

Main Boilers Built by *Swan Hunter & W.R. Ltd.*
at *Walker, R. Tyne*

Donkey " " *None*

at
Date of Completion *30.5.29*

First Visit *16.11.28* Last Visit *30.5.29* Total Visits



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RECIPROCATING ENGINES.

Works No. 1356. No. of Sets One. Description Triple expansion surface Condensing.

No. of Cylinders each Engine Three. No. of Cranks Three.
 Diars. of Cylinders 15", 25" & 40" Stroke 33"
 Cubic feet in each L.P. Cylinder 24.

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

" " each Receiver?

Type of H.P. Valves, Piston Valve.

1st I.P. " Tric Valve.

2nd I.P.,

L.P. " Double ported slide.

" Valve Gear Stephenson Link.

" Condenser Circular Two Flow. Cooling Surface 700 sq. ft.

Diameter of Piston Rods (plain part) Screwed part (bottom of thread)

Material "

Diars. of Connecting Rods (smallest part) Material

" Crosshead Gudgeons Length of Bearing Material

No. of Crosshead Bolts (each) Diars. over Thrd. Thrds. per inch Material

" Crank Pin " " " "

" Main Bearings Lengths

" Bolts in each Diars. over Thread Threads per inch Material

" Holding Down Bolts, each Engine 61. Diars. 1 1/4" No. of Metal Chocks 61.

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?

Connecting Rods, Forged by

Life Forge. Scotland.

Piston " "

Crossheads,

Connecting Rods, Finished by

Swan Hunter. Walker.

Piston " "

Crossheads,

Date of Harbour Trial

28.5.29.

" Trial Trip

30.5.29.

Trials run at

Off River Tyne.

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

Yes.

If so, what was the I.H.P.?

867

Revs. per min. 94.0

Pressure in 1st I.P. Receiver,

73

lbs., 2nd I.P.,

✓

lbs., L.P.,

15.5

lbs., Vacuum, 24.0 ins.

Speed on Trial

8.83

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

data:—

Builders' estimated I.H.P.

✓

Revs. per min. ✓

Estimated Speed.

✓

This machinery is a duplicate of that numbered 1324 and fitted into No 1369 8 1/2" John O. McKellar, building in Swan Hunter Wallsend yard at the same time and the details of which are similar unless otherwise stated.



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TURBO-ELECTRIC PROPELLING MACHINERY.

No. of Turbo-Generating Sets

Capacity of each

Type of Turbines employed

Description of Generators

No. of Motors driving Propeller Shafting

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

Is Single or Double Reduction Gear employed?

Description of Motors

Diam. of 1st Reduction Pinion

" 1st " Wheel

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

" 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.

Built - color - base - base

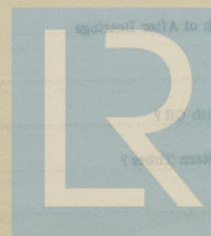
No. of Collars

At 4th Coupling

No. of Couplings

Diam. of Pinion Circle

At Couplings



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SHAFTING.

Are the Crank Shafts Built or Solid?

Built

No. of Lengths in each

Angle of Cranks

Diar. by Rule

Actual

In Way of Webs

" of Crank Pins

Length between Webs

Greatest Width of Crank Webs

Thickness

Least

Diar. of Keys in Crank Webs

Length

" Dowels in Crank Pins

Length

Screwed or Plain

No. of Bolts each Coupling

Diar. at Mid Length

Diar. of Pitch Circle

Greatest Distance from Edge of Main Bearing to Crank Web

Type of Thrust Blocks

Multi-collar horse-shoe.

No. " Rings

Diar. of Thrust Shafts at bottom of Collars

No. of Collars

" " Forward Coupling

At Aft Coupling

Diar. of Intermediate Shafting by Rule

Actual

No. of Lengths

No. of Bolts, each Coupling

Diar. at Mid Length

Diar. of Pitch Circle

no intermediate shafting.

Diar. of Propeller Shafts by Rule

Actual

At Couplings

Are Propeller Shafts fitted with Continuous Brass Liners?

Diar. over Liners

Length of After Bearings

Of what Material are the After Bearings composed?

Are Means provided for lubricating the After Bearings with Oil?

" " to prevent Sea Water entering the Stern Tubes?

If so, what Type is adopted?

SKETCH OF CRANK SHAFT.

*Same as 9/5 'Kingdove'.
Engine 1236. built 1927.*

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No. of Blades each Propeller

Fitted or Solid?

Material of Blades

Boss

Diam. of Propellers

Pitch

Surface (each

S. ft.)

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

Crank Shafts Forged by

John Rogerson.

Material

Steel.

Pins

Webs

Thrust Shafts

Interned.,

Propeller,

Crank " Finished by

None.

John Rogerson.

Swan, Hunter. Walker.

Thrust

Interned.,

Propeller

STAMP MARKS ON SHAFTS.

Crank shaft.

BC. 571.

J.L. 19/3/29

Thrust shaft.

BC. 571.

J.L. 19/3/29

Propeller shaft.

BC. 571.

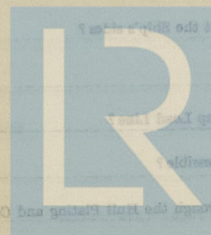
J.L. 19/3/29

SKETCH OF PROPELLER SHAFT.

Same as $\frac{8}{15}$ "Kingdoc".

Engine No 1236.

Built 1927.



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BOILERS

Works No. 1356.
 No. of Boilers Two. Type Cylindrical Multitubular.
 Single or Double-ended Single-ended.
 No. of Furnaces in each Two.
 Type of Furnaces Brighton.
 Date when Plan approved 30.1.29.
 Approved Working Pressure 180 lbs.
 Hydraulic Test Pressure 30.4.29. 320 lbs.
 Date of Hydraulic Test 30.4.29.
 „ when Safety Valves set 28.5.29.
 Pressure at which Valves were set 185 lbs.
 Date of Accumulation Test none taken.
 Maximum Pressure under Accumulation Test ✓
 System of Draught Howdens' Forced. C.A.
 Can Boilers be worked separately? Yes.
 Makers of Plates Steel Coy of Scotland.
 „ Stay Bars „
 „ Rivets Rivet Bolt + nut Coy.
 „ Furnaces Brighton Blue + tube Coy.
 Greatest Internal Diam. of Boilers
 „ „ Length „
 Square Feet of Heating Surface each Boiler
 „ „ Grate „ „
 No. of Safety Valves each Boiler Rule Diam. Actual
 Are the Safety Valves fitted with Lifting Gear?
 No. of Pressure Gauges, each Boiler No. of Water Gauges
 „ Test Cocks „ „ Salinometer Cocks

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Thickness of End Plates in Steam Space Approved

" " " " in Boilers

Pitch of Steam Space Stays

Diar. " " " Approved Threads per Inch

" " " " in Boilers "

Material of " " "

How are Stays Secured?

Diar. and Thickness of Loose Washers on End Plates

" " Riveted " "

Width " " Doubling Strips "

Thickness of Middle Back End Plates Approved

" " " " in Boilers

Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at " " " "

Diar. of Stays Approved Threads per Inch

" " in Boilers "

Material "

Are Stays fitted with Nuts outside?

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



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Diar. of Stays Approved Threads per Inch

" " in Boilers

Material "

Thickness of Front Tube Plates Approved

" " " " in Boilers

Pitch of Stay Tubes at Spaces between Stacks of Tubes

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

" Plain "

Thickness of Stay Tubes

" Plain "

External Diar. of Tubes

Material "

Thickness of Furnace Plates Approved

" " " in Boilers

Smallest outside Diar. of Furnaces

Length between Tube Plates

Width of Combustion Chambers (Front to Back)

Thickness of " " Tops Approved

" " " " in Boilers

Pitch of Screwed Stays in C.O. Tops

Threads per Inch

Diag. of Screwed Stays Approved

" " " in Boilers

Material "

Thickness of Combustion Chamber Walls Approved

" " " in Boilers

Pitch of Screwed Stays in C.O. Sides

Diag. " " " Approved

" " " in Boilers

Material "

Thickness of Combustion Chamber Backs Approved

" " " in Boilers

Pitch of Screwed Stays in C.O. Backs

Diag. " " " Approved

" " " in Boilers

Material "

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

Diag. of Tubes



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Diam. of Screwed Stays Approved

Threads per Inch

" " " in Boilers

Material " "

Thickness of Combustion Chamber Sides Approved

" " " " in Boilers

Pitch of Screwed Stays in C.O. Sides

Diam. " " Approved

Threads per Inch

" " " in Boilers

Material " "

Thickness of Combustion Chamber Backs Approved

" " " " in Boilers

Pitch of Screwed Stays in C.O. Backs

Diam. " " Approved

Threads per Inch

" " " in Boilers

Material " "

Are all Screwed Stays fitted with Nuts inside C.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

VERTICAL DONKEY BOILERS.

Type	No. of Boilers
Height	Distance In. Diam.
Height of Boiler Crown above Fire Grate	
Are Boiler Crowns Flat or Dished?	
Internal Radius of Dished Boilers	Thickness of Plates
Description of Stays in Boiler Crowns	Width of Overlap
Distance of Stays from	Plate
Height of Ribbed Crowns above Fire Grate	
Are Ribbed Crowns Flat or Dished?	
External Radius of Ribbed Crowns	Thickness of Plates
No. of Crown Stays	Diam.
External Diam. of Ribbed at Top	Bottom
Thickness	Material
No. of Water Tubes	Dist. Diam.
Material of Water Tubes	
Size of Manholes in Shell	
Dimensions of Compensating Ring	
Heating Surface each Boiler	Grate Surface

SUPERHEATERS.



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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 Basing Gear?

Date of Hydraulic Test

Test Pressure

Date when Safety Valves set

Pressure on Valves

MAIN STEAM PIPES

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



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MAIN STEAM PIPES.

No. of Lengths	3.		
Material	Steel		
Brazed, Welded or Seamless	Seamless		
Internal Diam.	3½.		
Thickness	¼.		
How are Flanges secured?	Screwed		
Date of Hydraulic Test	16.5.29.		
Test Pressure	540 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			

No.	Type	Location	Working Pressure	Date of Test of Safety Valves under Steam
10	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.
11	Horizontal	Boiler Room	180 lb/sq. in.	16.5.29.
12	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.
13	Horizontal	Boiler Room	180 lb/sq. in.	16.5.29.
14	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.
15	Horizontal	Boiler Room	180 lb/sq. in.	16.5.29.
16	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.
17	Horizontal	Boiler Room	180 lb/sq. in.	16.5.29.
18	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.
19	Horizontal	Boiler Room	180 lb/sq. in.	16.5.29.
20	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.

No.	Type	Location	Working Pressure	Date of Test of Safety Valves under Steam
21	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.
22	Horizontal	Boiler Room	180 lb/sq. in.	16.5.29.
23	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.
24	Horizontal	Boiler Room	180 lb/sq. in.	16.5.29.
25	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.
26	Horizontal	Boiler Room	180 lb/sq. in.	16.5.29.
27	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.
28	Horizontal	Boiler Room	180 lb/sq. in.	16.5.29.
29	Vertical	Boiler Room	180 lb/sq. in.	16.5.29.
30	Horizontal	Boiler Room	180 lb/sq. in.	16.5.29.



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OTHER ARTICLES OF SPARE GEAR:—

Are Thermometers That are over-averaged that Water cannot enter and freeze in them?

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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

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

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.
Stores of Dynamite	Switzerland	300g	30g	30g
Capacity	110	110	380	
Current Alternating or Continuous	Continuous			
Grade or Quality of Wire	Grade wire			
Position of Dynamo	On platform			
Main Switch Room	On platform			
No. of Cylinders in which apparatus was provided on Main Switch Room				
Position of these Cylinders				
Articles of Spare Gear for Refrigerating Plant carried on board:—				



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

Are Cut-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

On Aux. " " each Auxiliary Circuit

Wherever a Cable is reduced in size

To each Lamp Circuit

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

Are the Fuses of Standard Sizes?

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

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

Smallest Single Wire used, No.

S.W.G., Largest, No.

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

Are all Joints in Cables properly soldered and thoroughly Insulated so that the efficiency of the Cables

is unimpaired?

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?

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

Has the Insulation Resistance over the whole system been tested? Yes.

What does the Resistance amount to? 500,000 Ohms.

Is the Installation supplied with a Voltmeter? Yes

" " " an Ampere Meter Yes

Date of Trial of complete Installation 28.5.29.

Duration of Trial

6 hours.

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, Main and Branch Cables so placed that the Compensation

affected by them?

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

Has the Installation been tested over the whole system?

What does the Installation amount to?

Is the Installation supplied with a Ventilation?

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.

as ascertained by ^{me} from personal examination

"Farrandoc"

John Lundgren
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.O. Cub. ft.	:	:	:
£	:	:	:
Testing, &c. ...	:	:	:
£	:	:	:
Expenses ...	:	:	:
Total ... £	:	:	:

It is submitted that this Report be approved,

Joe Barr for Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the *23rd December 1929*

Fees advised

Fees paid



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Secretary.

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