

No. 2299

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 2269 No. in Register Book 3653

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

Received at Head Office *24th February 1930*

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

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

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

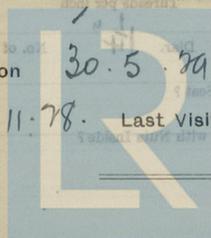
Engines Built by *Swan Hunter & W.R. Ltd.*
at *Walker, R. Tyne.*

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 Cyl.?
 " " 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 "
 Diar. of Connecting Rods (smallest part) Material
 " Crosshead Gudgeons Length of Bearing Material
 No. of Crosshead Bolts (each) Diar. over Thrd. Thrds. per inch Material
 " Crank Pin " " " "
 " Main Bearings Lengths
 " Bolts in each Diar. over Thread Threads per inch Material
 " Holding Down Bolts, each Engine 61. Diar. 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's 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

Diar. of 1st Reduction Pinion } Width Pitch of Teeth
 " 1st " Wheel

Estimated Pressure per lineal inch

Diar. 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 Revols. per min. S.H.P.

Makers of Turbines

" Generators *Bill*

" Motors *James Watson & Co. Glasgow*

" Reduction Gear *James Watson & Co. Glasgow*

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

DESCRIPTION OF INSTALLATION.

Multi-color - base - blue

No. of Bolts each Coupling

Diam. of Bolts at Mid Length

Diam. of Pitch Circle

No. of Collars

Diam. of Thrust Shafts at bottom of Collars

Forward Coupling

At Aft Coupling

No. of Bolts each Coupling

Diam. of Bolts at Mid Length

Diam. of Pitch Circle

At Couplings

Diam. of Propeller Shafts by Rate

At Propeller Shafts fixed with Continuous Thrust Locks?



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 $\frac{3}{4}$ 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 $\frac{8}{16}$ "Kingdoc".Engine No 1236.
Built 1927.

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 Dighton.

Date when Plan approved 30.1.29.

Approved Working Pressure 180 lbs. sq. in.

Hydraulic Test Pressure 30.4.29. 320 lbs. sq. in.

Date of Hydraulic Test 30.4.29.

„ when Safety Valves set 28.5.29.

Pressure at which Valves were set 185 lbs. sq. in.

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 Dighton Flue + 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 Easing Gear?

No. of Pressure Gauges, each Boiler	No. of Water Gauges

„ Test Cocks „ „ Salinometer Cocks

Are the Water Gauges fitted direct to the Boiler Shell or mounted on Tanks?

Are the Water Gauges fitted direct to the Boiler Shell or connected by Pipes?

Are these Pipes connected to Boilers by Cocks or Valves?

Are the Cocks or Valves fitted on Boiler Shells?

No. of Stakes of Shell Plates in each Boiler

„ „ „ „ „ „

Thickness of Shell Plates Approved

„ „ „ „ „ „

Are the Rivets Iron or Steel?

Are the Longitudinal Stakes Hand or Machine Riveted?

Are the Butt Straps Single or Double?

Are the Double Butt Straps of equal width?

Thickness of outside Butt straps

„ „ „ „ „ „

Are Longitudinal Stakes Hand or Machine Riveted?

Are they Single, Double, or Triple Riveted?

No. of Rivets in a Trip

Diam. of Rivet Hole

„ „ „ „ „ „

No. of Rows of Rivets in Centre Circumferential Stakes

Are these Stakes Hand or Machine Riveted?

Diam. of Rivet Hole

„ „ „ „ „ „

No. of Rows of Rivets in Yoke and Circumferential Stakes

Are these Stakes Hand or Machine Riveted?

Diam. of Rivet Hole

„ „ „ „ „ „

No. of Rows of Rivets in Neck and Circumferential Stakes

Are these Stakes Hand or Machine Riveted?

Diam. of Rivet Hole

„ „ „ „ „ „



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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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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.

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

SUPERHEATERS

Description of Superheaters
Which Boilers are connected to Superheaters?
Can Superheaters be shut off while Boilers are working?
No. of Safety Valves on each Superheater
Size of Safety Valves
Pressure on Valves



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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

Internal Dia.

Thickness

Date of Hydraulic Test

Test Pressure

8
Steel
Seamed
3 1/2
4
Seamed
10.5-20
240 lbs



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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 lbs.		
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.

No.	Type	Date of Test	Working Pressure	Date of Test of Safety Valve under Steam

FEED WATER HEATERS.

No.	Type	Date of Test	Working Pressure

FEED WATER FILTERS.

No.	Type	Date of Test	Working Pressure



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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.
Starboard	30°	30°	30 min	0
Port	30°	30°	30 min	0
Forward	30°	30°	30 min	0
Aft	30°	30°	30 min	0
Upper Deck	30°	30°	30 min	0
Lower Deck	30°	30°	30 min	0
Hold	30°	30°	30 min	0
Galley	30°	30°	30 min	0
Engine Room	30°	30°	30 min	0
Boiler Room	30°	30°	30 min	0
Water Tank	30°	30°	30 min	0
Oil Tank	30°	30°	30 min	0
Coal Bunker	30°	30°	30 min	0
Stowage	30°	30°	30 min	0
Deck	30°	30°	30 min	0
Superstructure	30°	30°	30 min	0
Roof	30°	30°	30 min	0
Wing	30°	30°	30 min	0
Staircase	30°	30°	30 min	0
Passage	30°	30°	30 min	0
Corridor	30°	30°	30 min	0
Room	30°	30°	30 min	0
Deck	30°	30°	30 min	0
Superstructure	30°	30°	30 min	0
Roof	30°	30°	30 min	0
Wing	30°	30°	30 min	0
Staircase	30°	30°	30 min	0
Passage	30°	30°	30 min	0
Corridor	30°	30°	30 min	0
Room	30°	30°	30 min	0

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

Installation fitted by
No. and Description of Dynamos
Labels of Dynamos
Capacity
Current Alternation or Conditions
Single or Double Wire System
Location of Dynamos
Main Switch Board
No. of Circuits to which switches are provided on Main Switch Board
Particulars of these Circuits

Circuit	Number of Lights	Number of Motors	Number of Pumps	Number of Fans	Number of Hoists	Number of Cranes	Number of Winches	Number of Other Appliances
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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.*



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. *✓*

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

Has the Installation Inspection over the whole system been tested?

What does the Estimate amount to?

Is the Installation supplied with a Venturimeter?

Date of Trial to complete Installation

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

Are the materials used in the construction of the

Main Boilers, as shown in the Plans of Main Boilers

and Auxiliary Boilers

Whichever is applicable in this case

in each case

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,

Jack 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.

GENERAL CONSTRUCTION

THE FOLLOWING IS A SUMMARY OF THE WORK DONE DURING THE YEAR 1954

1. GENERAL CONSTRUCTION	100.00	100.00
2. REPAIRS AND MAINTENANCE	50.00	50.00
3. PURCHASE OF EQUIPMENT	25.00	25.00
4. TRAVEL	10.00	10.00
5. MISCELLANEOUS	15.00	15.00
Total	200.00	200.00

It is submitted that this Report be approved.

Approved by the Committee for the Class of M.B.S. on the 15th December 1954

Handwritten signature

Handwritten signature

Yours advised

Yours truly

Large handwritten signature



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