

No. 2365

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. *2423* No. in Register Book *3856*

" _____ "

S.S. *MUROTO*

Makers of Engines

Swanwick & Co. Ltd.

Works No.

380.

Makers of Main Boilers

Richardsons Westgarth & Co. Ltd.

Works No.

D. 204.

Makers of Donkey Boiler

Works No. ✓

MACHINERY.



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015111-015125-0291

No.

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

Received at Head Office *16th February 1901.*

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the ~~Single~~ *Triple* ~~Compound~~ *Steam* "Hawley"
Murato

Official No. *162089* Port of Registry *Cardiff.*

Registered Owners *Wales West Ltd.*

Engines Built by *Sydney Pockels Ltd.*

at *Coth Bank-on-Sea.*

Main Boilers Built by *Richardson & Westgarth & Co. Ltd.*

at *Walthamstow.*

Donkey

at

Date of Completion *2-31*

First Visit *13-2-30* Last Visit *3-2-31* Total Visits *45*



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RECIPROCATING ENGINES.

Works No. 380

No. of Sets 1

Description

Triple expansion
S.P. 3 crks.

No. of Cylinders each Engine

3

No. of Cranks

3

Diam. of Cylinders

13"-22³/₄"-37"

Stroke

26"

Cubic feet in each L.P. Cylinder

16.2

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

y/o.

" " each Receiver?

y/o.

Type of H.P. Valves,

piston
piston

1st I.P.,

2nd I.P.,

L.P.,

slide.

" Valve Gear

" Condenser

Cooling Surface

sq. ft.

Diameter of Piston Rods (plain part)

Screwed part (bottom of thread)

Material

Diam. of Connecting Rods (smallest part)

Material

" Crosshead Gudgeons

Length of Bearing

Material

No. of Crosshead Bolts (each)

Diam. over Thrd.

Thrds. per inch

Material

" Crank Pin " "

" Main Bearings

Lengths

" Bolts in each

Diam. over Thread

Threads per inch

Material

" Holding Down Bolts each Engine

Diam.

No. of Metal Checks

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

Brown Bros.

Piston " "

Crossheads,

Connecting Rods, Finished by

Smiths Works Ltd.

Piston " "

Crossheads,

Date of Harbour Trial

22-1-31

" Trial Trip

3-2-31

Trials run at

Between Lynes Blyth

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

y/o.

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

612

Revs. per min.

118

Pressure in 1st I.P. Receiver,

60

lbs., 2nd I.P.,

lbs., L.P.,

11

lbs., Vacuum, 25" ins.

Speed on Trial

no check taken

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

data:—

Builders' estimated I.H.P.

10 knots.

Revs. per min.

Estimated Speed



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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.I.P.

Makers of Turbines

" Generators

" Motors

" Reduction Gear

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

DESCRIPTION OF INSTALLATION.



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BOILERS

Works No. *D. 207.*

No. of Boilers *1* Type *Cylindrical multitubular*

Single or Double-ended *single.*

No. of Furnaces in each *3*

Type of Furnaces *plain.*

Date when Plan approved *29-1-30*

Approved Working Pressure *200 lbs.*

Hydraulic Test Pressure *350 "*

Date of Hydraulic Test *7-5-30*

„ when Safety Valves set *22-1-31*

Pressure at which Valves were set *206 lbs.*

Date of Accumulation Test *22-1-31*

Maximum Pressure under Accumulation Test *206 lbs.*

System of Draught *natural*

Can Boilers be worked separately? *yes.*

Makers of Plates *Steel Coy of Scotland*

„ Stay Bars *R.B. & Co. Ltd.*

„ Rivets *Sleigh & Co. Ltd.*

„ Furnaces *Sleigh & Co. Ltd.*

Greatest Internal Diam. of Boilers *14'-0"*

„ „ Length „ *10'-8"*

Square Feet of Heating Surface each Boiler *1905 sq*

„ „ Grate „ „ *50.75 sq*

No. of Safety Valves each Boiler *2* Rule Diam. Actual *2*

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

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

„ Test Cocks „ *3* „ Salinometer Cocks *1*



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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. valves

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

single

naked

No. of Strakes of Shell Plating in each Boiler

3

Plates in each Strake

plain

Thickness of Shell Plates Approved

29-1-32

in Boilers

200 lbs

Are the Rivets Iron or Steel?

SSO

Are the Longitudinal Seams Butt or Lap Joints?

2-5-30

Are the Butt Straps Single or Double?

22-1-30

Are the Double Butt Straps of equal width?

206

Thickness of outside Butt Straps

22-1-30

inside

206

Are Longitudinal Seams Hand or Machine Riveted?

hand

Are they Single, Double, or Treble Riveted?

single

No. of Rivets in a Pitch

10

Diam. of Rivet Holes

Pitch

No. of Rows of Rivets in Centre Circumferential Seams

2

Are these Seams Hand or Machine Riveted?

hand

Diam. of Rivet Holes

Pitch

No. of Rows of Rivets in Front End Circumferential Seams

2

Are these Seams Hand or Machine riveted?

hand

Diam. of Rivet Holes

Pitch

No. of Rows of Rivets in Back End Circumferential Seams

2

Are these Seams Hand or Machine Riveted?

hand

Diam. of Rivet Holes

Pitch

Size of Manholes in Shell

2

Dimensions of Compensating Rings

3

Same as eps from no 1

Thickness of End Plates in Steam Space Approved

in Boilers

Pitch of Steam Space Straps

Thickness of End Plates in Boilers

Material of

How the Straps are Secured

Size and Thickness of Loose Washers on End Plates

Welded

Double Straps

Thickness of Middle Hook End Plates Approved

in Boilers

Thickness of Doublers in Wide Spaces between Transoms

Pitch of Straps

Thickness of End Plates in Boilers

Material

Are Straps fitted with Nuts outside?

Thickness of End Plates in Boilers

in Boilers

Pitch of Straps in Wide Spaces between Transoms

Thickness of Doublers

Thickness of Front End Plates in Boilers

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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

Same as Stays

Diag. of Stays Approved

" " " " " " in Boilers

Material

Thickness of Front Tube Plates Approved

" " " " " " in Boilers

Pitch of Stay Tubes in 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

" " " " " " in Boilers

Thickness of Stay Tubes

" " " " " " in Boilers

Material

Material

Thickness of Furnace Plates Approved

" " " " " " in Boilers

Thickness outside Diag. of Furnaces

Length between Tube Plates

Width of Reinforcement Bands

" " " " " " in Boilers

Pitch of Stay Tubes in C.C. Tubes



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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

Same as sps Furnace

Threads per Inch

Diar. of Screwed Stays Approved

.. .. in Boilers

Material ..

Thickness of Combustion Chamber Tops Approved

.. .. in Boilers

Pitch of Screwed Stays in C.O. Tops

.. .. Approved

.. .. in Boilers

Material ..

Thickness of Combustion Chamber Tops Approved

.. .. in Boilers

Pitch of Screwed Stays in C.O. Tops

.. .. Approved

.. .. in Boilers

Material ..

Are all Screwed Stays fitted with Nuts inside

Thickness of Combustion Chamber Tops

No. of Stays over each Wind Chamber



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Same as sps Furnace

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.C. Sides

Diam. " " Approved Threads per Inch

" " " " in Boilers

Material " " " "

Thickness of Combustion Chamber Backs Approved

" " " " in Boilers

Pitch of Screwed Stays in C.C. Backs

Diam. " " Approved Threads per Inch

" " " " in Boilers

Material " " " "

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

Thickness of Combustion Chamber Bottom

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

Done as sps shown

VERTICAL DONKEY BOILERS

No. of Boilers	Type
Quantity for Boiler	
Height of Boiler above the Grate	
Are Sides Covered with Plates?	
Internal Radius of Head Boilers	Thickness of Plates
Description of Cover in Boiler Chamber	
Plan of Head Boilers	
Height of Head Boilers above the Grate	
Are Tubes Covered with Plates?	
Internal Radius of Head Boilers	
No. of Tubes Boilers	Diam.
External Diam. of Tubes at Top	Bottom
Thickness of Tubes	
No. of Water Tubes	External Diam.
Material of Water Tubes	
Size of Manholes in Shell	
Dimensions of Compensating Pipe	
Leading Brackets with Bolts	Clearance between

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 Easing Gear?

Date of Hydraulic Test Test Pressure

Date when Safety Valves set Pressure on Valves

MAIN STEAM PIPES

No. of Boilers

Material

Internal Radius of Dished Ends

Thickness

Date of Hydraulic Test

Test Pressure

No. of Boilers

Material

Internal Diar.

Thickness

Date of Hydraulic Test

Test Pressure

No. of Boilers

Material

Internal Diar.

Thickness

Date of Hydraulic Test

Test Pressure

No. of Boilers

Material

Internal Diar.

Thickness

Date of Hydraulic Test

Test Pressure



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MAIN STEAM PIPES.

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. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

1
copper.
S.D.
4"
5" W.S.
braced.
15-1-31
400 lbs.

LIST OF PUMPS

Feed pump 6" x 4" x 6"
Ballast pump 6" x 6" x 6"
Air pump 6" x 6" x 6"

FEED WATER HEATERS

1
Type
Date of Test
25-1-21
200 lbs.

FEED WATER FILTERS

1
Type
Date of Test

SUPERHEATERS



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

R. Richardson
Installation Title by
No. and Description of Dynamometers
Capacity
Currents Alternating or Continuous
Single or Double Wire System
Location of Dynamometers
No. of Circuits to which switches are placed on this switch board
Particulars of these Circuits

Particulars of these Circuits	No. of Circuits to which switches are placed on this switch board	Location of Dynamometers	Single or Double Wire System	Currents Alternating or Continuous	Capacity	No. and Description of Dynamometers	Installation Title by
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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 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

Same as of previous

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?

What does the Resistance amount to? Ohms.

Is the Installation supplied with a Voltmeter?

" " " an Ampere Meter

Date of Trial of complete Installation 3-2-21 Duration of Trial Ohms.

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 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. MUROTO

as ascertained by ^{me} from personal examination

J. D. Stephenson
 Engineer Surveyor to the British Corporation for the
 Survey and Registry of Shipping.

Fees—

MAIN BOILERS.		£	s.	d.
H.S.	<i>1908</i> Sq. ft.	:	:	
G.S.	<i>50.75</i> "	:	:	
DONKEY BOILERS.				
H.S.	— Sq. ft.	:	:	
G.S.	— "	:	:	
		£	:	:
ENGINES.				
L.P.C.	<i>16.2</i> Cub. ft.	:	:	
		£	:	:
Testing, &c.		:	:	
		£	:	:
Expenses		:	:	
Total ...		£	:	:

It is submitted that this Report be approved,

J. D. Stephenson
 Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the *18th February 1931*

18 FEB 1931

Fees advised

Fees paid



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W. C. Lewis
 Secretary.



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