

No. 2282

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 2263 No. in Register Book 3647

J. N. McWatters.
"Lockwell."
S.S.

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

Works No. 1354.

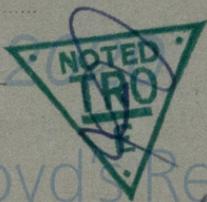
Makers of Main Boilers *Swan Hunter & W.R. Ltd.*

Works No. 1354

Makers of Donkey Boiler *None.*

Works No. ✓

MACHINERY.



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44

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No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

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 Screw~~ ^{Twin Quadruple} Screw Steamer "Lockwell".

Official No. 161519 Port of Registry

Registered Owners Welland Steamship Co. Ltd.

Welland, Ontario, Canada.

Engines Built by Swan Hunter & W.R. Ltd.

at Walker R. Ique

Main Boilers Built by Swan Hunter & W.R. Ltd.

at Walker.

Donkey " " None

at ✓
Date of Completion 2.5.29.

First Visit 26.11.28. Last Visit 2.5.29. Total Visits

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RECIPROCATING ENGINES.

Works No. **1354.** 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.?

Yes
Yes

" " each Receiver?

Type of H P. Valves,

Piston Valve.
Toric Valve.

1st I.P.,

2nd I.P.,

L.P.,

Doubleported.

" 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.

1/4"

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 Coy. Scotland.

Piston " "

Crossheads,

Connecting Rods, Finished by

Swan Hunter. Walker.

Piston " "

Crossheads,

Date of Harbour Trial

29.4.29

" Trial Trip

2-5-29

Trials run at

off River Quay.

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

Yes.

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

866

Revs. per min. **94.15**

Pressure in 1st I.P. Receiver,

70 lbs., 2nd I.P.,

✓

lbs., L.P., **11.0** lbs., Vacuum, **75** ins.

Speed on Trial

9.29

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

data:—

Builders' estimated L.H.P.

✓

Revs per min. ✓

Estimated Speed

This machinery is a duplicate of that numbered 1324 and fitted in No 1369 of "John D. McKellar" building at the same time and the details of which are similar unless otherwise stated.



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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-collor 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

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 1/2 Kingdoc.
Engine 1236. built 1927.*



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No. of Blades each Propeller *11* Fitted or Solid? *Cast*Material of Blades *Cast* Boss

Diam. of Propellers Pitch Surface (each S. ft.)

Coefficient of Displacement of Vessel at $\frac{1}{2}$ Moulded Depth *1.05*

Crank Shafts Forged by	<i>John Rogerson.</i>	Material	<i>Steel</i>
" Pins	"	"	"
" Webs	"	"	"
Thrust Shafts	"	"	"
Intermed. "	"	<i>none</i>	"
Propeller "	"	<i>John Rogerson.</i>	"
Crank " Finished by	"	<i>Swan Hunter & W.R. Ltd.</i>	"
Thrust "	"	"	"
Intermed. "	"	<i>none.</i>	"
Propeller "	"	<i>Swan Hunter & W.R. Ltd.</i>	"

STAMP MARKS ON SHAFTS.

Crank shaft	<i>B.C. 571.</i>	<i>J.L. 19/3/29</i>
Thrust shaft	<i>B.C. 571.</i>	<i>J.L. 19/3/29</i>
Propeller shaft.	<i>B.C. 571.</i>	<i>J.L. 19/3/29</i>

SKETCH OF PROPELLER SHAFT.

Same as 'Kingdoc'.

Engine No 1236.

Build *1927*



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SKETCH OF SHAFT PUMPS, ETC.

No. of Air Pumps *One.* Diar. Stroke

Worked by Main or Independent Engines?

No. of Circulating Pumps *One* Diar. StrokeType of " *Dawson & Bowie, Simplex.*

Diar. of " Suction from Sea

Has each Pump a Bilge Suction with Non-return Valve? Diar.

What other Pumps can circulate through Condenser? *Ballast pump.*

No. of Feed Pumps on Main Engine 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 Diar. Stroke

What other Pumps can feed the Boilers? *General service pump,
and ejector.*

No. of Bilge Pumps on Main Engine Diar. Stroke

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

No. of Independent Bilge Pumps

What other Pumps can draw from the Bilges? *Circulating pump and
ballast pump.*Are all Bilge Suctions fitted with Roses? *yes - or mudboxes.*

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

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

Are they placed so as to be easily accessible?

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

Are they fitted direct to the Hull Plating and easily accessible?

Are all Blow-off Cocks or Valves fitted with Spigots through the Hull Plating and Covering Plates or Flanges
on the Outside?

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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

" " in Boilers

Material "

Thickness of Combustion Chamber Tops Approved

" " " in Boilers

Pitch of Screwed Stays in C.O. Tops

Threads per Inch

" " in Boilers

Material "

Thickness of Combustion Chamber Tops Approved

" " " in Boilers

Pitch of Screwed Stays in C.O. Tops

Threads per Inch

" " in Boilers

Material "

Are all screw stays fitted with Nuts inside C.O.T.

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

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Diar. 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

Diar. " " Approved Threads per Inch

" " " " in Boilers

Material " "

Thickness of Combustion Chamber Backs Approved

" " " " in Boilers

Pitch of Screwed Stays in C.O. Backs

Diar. " " 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

Greatest Top Diar. Height

Height of Boiler Crown above Fire Grate

Are Boiler Crown Flat or Dished?

Internal Radius of Dished Boilers Thickness of Plates

Description of Seams in Boiler Crown

Diar. of Lower Boilers Top

Height of Upper Crown above Fire Grate

Are Upper Crown Flat or Dished?

Internal Radius of Dished Crown Thickness of Plates

No. of Crown Stays Diar.

External Diar. of Boiler at Top Bottom Thickness of Plates

No. of Water Tubes Top Diar. Thickness

Material of Water Tubes

Size of Manhole in Shell

Distances of Combustion Head

Heating Surface each Boiler Gross Surface

SUPERHEATERS

Description of Superheaters

Where situated?

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MAIN STEAM PIPES.

No. of Lengths	3.		
Material	Steel.		
Brazed, Welded or Seamless	Seamless		
Internal Diar.	3½"		
Thickness	¼"		
How are Flanges secured?	Screwed.		
Date of Hydraulic Test	25.4.29.		
Test Pressure	540 lbs.		
No. of Lengths			
Material			
Brazed, Welded or Seamless			
Internal Diar.			
Thickness			
How are Flanges secured?			
Date of Hydraulic Test			
Test Pressure			
No. of Lengths			
Material			
Brazed, Welded or Seamless			
Internal Diar.			
Thickness			
How are Flanges secured?			
Date of Hydraulic Test			
Test Pressure			

STEAM EVAPORATORS.

No.	
Type	
Material	Same as John P. Walker
Working Pressure	
Date of Test of Safety Valves under Steam	
Sup. No.	1022. Built 1927.
No.	
Type	
Material	Hooked
Working Pressure	100 lbs.
Date of Test	7-3-29
Test Pressure	150 lbs.

FEED WATER HEATERS.

No.	
Type	
Material	
Working Pressure	
Date of Test	
Test Pressure	
No.	
Type	
Material	
Working Pressure	
Date of Test	
Test Pressure	

FEED WATER FILTERS.

No.	
Type	
Material	
Working Pressure	
Date of Test	
Test Pressure	



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REFRIGERATORS.

No. of Machines Capacity of each No. of Compressors

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.
No. of				
Capacity				
Current Attending or Consumed				
Engine or Double Work System				
Position of Engines				
No. of Cylinders to which Refrigerator is applied				
Particulars of Tests				

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 tried by Mr. W.R. De. ...
No. and Description of Dynamos ...
Number of Dynamos ...
Capacity ... 110 Volts ...
Current Alternating or Continuous ...
Single or Double Wire System ...
Position 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	Watts	Current Required	Size of Conductor	Position of Switch	Position of Fuse
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Are Out-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 Out-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? *400,000* Ohms.
 Is the Installation supplied with a Voltmeter? *Yes*
 " " " an Ampere Meter *Yes*
 Date of Trial of complete Installation *29.4.29* 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. *✓*

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. "Rockwell".

as ascertained by ^{me} from personal examination

John Henderson
 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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