

No. 2300

X

THE BRITISH CORPORATION FOR THE SURVEY  
AND  
REGISTRY OF SHIPPING.

Report No. 2266 No. in Register Book 3650  
COTEAUDOC

EX. "  
S.S. "Dania".

Makers of Engines Wallsend Slipway & Eng Coy Ltd.

Works No. 886.

Makers of Main Boilers Wallsend Slipway & Eng Coy Ltd.

Works No. 886.

Makers of Donkey Boiler None.

Works No. ✓

MACHINERY.



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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 *24<sup>th</sup> February 1930*

Surveyor's Report on the New Engines, Boilers, and Auxiliary Machinery of the ~~Single Triple~~ <sup>Single Triple</sup> Screw Steamer "Damia"

Official No. *161522* Port of Registry *Newcastle*

Registered Owners *Inland Lines Ltd.  
Winnipeg.*

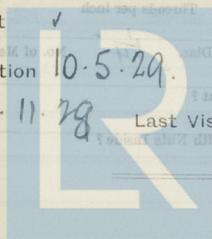
Engines Built by *The Wallsend Shipway & Eng'g. Co. Ltd.*  
at *Wallsend.*

Main Boilers Built by *The Wallsend Shipway & Eng'g. Co. Ltd.*  
at *Wallsend.*

Donkey "None"

Date of Completion *10.5.29.*

First Visit *10.11.29* Last Visit *10.5.29.* Total Visits



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## RECIPROCATING ENGINES.

Works No. 886. 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

" " each Receiver? Yes

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 Langley Forge. Langley.

Piston " "

Crossheads, " "

Connecting Rods, Finished by Wallsend Slipway. Wallsend.

Piston " "

Crossheads, " "

Date of Harbour Trial 3.5.29.

" Trial Trip 10.5.29.

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.? 774 Revols. per min. 92.0

Pressure in 1st I.P. Receiver, 72 lbs., 2nd I.P., ✓ lbs., L.P., 12.0 lbs., Vacuum, 25.5 ins.

Speed on Trial 8.96.

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

data:—

Builders' estimated I.H.P. ✓

Revol. per min. ✓

Estimated Speed ✓

This machinery is a duplicate of that numbered 1324 built by Swan Hunter and fitted into No 1369 s/s. "John O. McKellar" building at the same time, 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

" 1st " Wheel

} Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diar. of 2nd Reduction Pinion

" 2nd " Wheel

} Width

Pitch of Teeth

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.



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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 Coupling

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 "King doc".*

*Engine No 1236. built 1927.*

No. of Blades each Propeller *4* Titted or Solid? *SKETCH*

Material of Blades *Built* Boss

Diar. of Propellers Pitch Surface (each S. it.)

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

Crank Shafts Forged by *Langley Forge.* Material *Steel.*

„ Pins „ *„* „ *„* „ *„*

„ Webs „ *„* „ *„* „ *„*

Thrust Shafts „ *„* „ *„* „ *„*

~~Interned „~~ „ ~~„~~ „ ~~„~~ „ ~~„~~

Propeller „ „ *„* „ *„* „ *„*

Crank „ Finished by *Wallsend Slipway.*

Thrust „ „ *„* „ *„* „ *„*

~~Interned „~~ „ ~~„~~ „ ~~„~~ „ ~~„~~

Propeller „ „ *„* „ *„* „ *„*

## STAMP MARKS ON SHAFTS.

Crank shaft. *Be. 211, O.H.M., J.L. 22/3/29*

Thrust shaft. *Be. 201. O.H.M. J.L. 22/3/29*

Propeller shaft. *Be. 202. O.H.M. J.L. 3/4/29*

## SKETCH OF PROPELLER SHAFT.

No. of Air Pumps *One*

Worked by Main or Independent Engines?

No. of Circulation Pumps *One*

Type of *Engine No. 1236, 1027.*

Diar. of *Built.*

Has each Pump a tilting section with Non return Valve?

What other Pumps can circulate through Condensers? *Ballast pump*

No. of Feed Pumps on Main Engine

Are Spring-loaded Valves fitted to each Pump?

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

No. of Independent Feed Pumps

What other Pumps can feed the Boilers? *General service pump and Injector*

No. of Bilge Pumps on Main Engine

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

No. of Independent Bilge Pumps

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

Are all Bilge Sections fitted with Rovers? *Yes*

Are the Valves, cocks, and connections between Sea and Bilges?

Are all Sea Connections made with valves or cocks next the ship's side?

Are they placed so as to be easily accessible?

Are the Bilge Pumps fitted with Deep Lead Lines?

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

Are all Bilge Pumps fitted with the Hull Plating and Overboard Pipes or Plugs on the Outside?



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Are the Water Gauges fitted direct to the Boiler Shells or mounted on Pillars?

Are the Water Gauge Pillars fitted direct to the Boiler Shells or connected by Pipes?

Are these Pipes connected to Boilers by Cocks or Valves?

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

No. of Strakes of Shell Plating in each Boiler

Plates in each Strake

Thickness of Shell Plates Approved

in Boilers

Are the Rivets Iron or Steel?

Are the Longitudinal Seams Butt or Lap Joints?

Are the Butt Straps Single or Double?

Are the Double Butt Straps of equal width?

Thickness of outside Butt Straps

inside

Are Longitudinal Seams Hand or Machine Riveted?

Are they Single, Double, or Treble Riveted?

No. of Rivets in a Pitch

Diar. of Rivet Holes Pitch

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

Are these Seams Hand or Machine riveted?

Diar. of Rivet Holes Pitch

No. of Rows of Rivets in Back End Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diar. of Rivet Holes Pitch

Size of Manholes in Shell

Dimensions of Compensating Rings

Thickness of End Plates in Steam Space Approved

in Boilers

Pitch of Steam Space Straps

Diar. of Straps Approved

in Boilers

Material of

How are Straps Secured?

Dist. and Thickness of Loose Washers on End Plates

Riveted

Width of Damping Straps

Thickness of Middle Back End Plates Approved

in Boilers

Thickness of Doublings in Wide Spaces between Firbores

Pitch of Straps at

Diar. of Straps Approved

in Boilers

Material of

Are Straps fitted with nuts outside?

Thickness of Back End Plates at Bottom Approved

in Boilers

Pitch of Straps at Wide Spaces between Firbores

Thickness of Doublings

Thickness of Front End Plates at Bottom Approved

in Boilers

No. of Longitudinal Straps in Spaces between Firbores



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Thickness of End Plates in Steam Space Approved

Are the Stays Riveted or Bolted in Boilers

Pitch of Steam Space Stays

Diar. of Stays Approved Threads per Inch

Material of Stays in Boilers

How are Stays Secured?

Diar. and Thickness of Loose Washers on End Plates

Are the Washers Riveted or Bolted

Width of Doubling Strips

Are the Bolt Straps Single or Double?

Thickness of Middle Back End Plates Approved

Are the Plates Riveted or Bolted in Boilers

Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at

Diar. of Stays Approved Threads per Inch

Material of Stays in Boilers

Are Stays fitted with Nuts outside?

Are the Nuts Riveted or Bolted?

Thickness of Back End Plates at Bottom Approved

Are the Plates Riveted or Bolted in Boilers

Pitch of Stays at Wide Spaces between Fireboxes

Thickness of Doublings in

Are the Plates Riveted or Bolted?

Thickness of Front End Plates at Bottom Approved

Are the Plates Riveted or Bolted in Boilers

No. of Longitudinal Stays in Spaces between Furnaces

Are the Stays Riveted or Bolted?

Are the Plates Riveted or Bolted?

Diagonal of Stays Approved

Are the Stays Riveted or Bolted in Boilers

Material of Stays

Thickness of Front Tube Plates Approved

Are the Plates Riveted or Bolted in Boilers

Pitch of Stay Tubes at Spaces between Stacks of Tubes

Thickness of Doublings in

Are the Stay Tubes Riveted with Nuts at Front End

Are the Nuts Riveted or Bolted?

Thickness of Back Tube Plates Approved

Are the Plates Riveted or Bolted in Boilers

Pitch of Stay Tubes in Back Tube Plates

Are the Plates Riveted or Bolted?

Thickness of Stay Tubes

Are the Plates Riveted or Bolted?

External Diagonal of Tubes

Material of Tubes

Thickness of Furnace Plates Approved

Are the Plates Riveted or Bolted in Boilers

Smallest outside Diagonal of Furnaces

Length between Tubes

Width of Combustion Chambers (front to back)

Are the Plates Riveted or Bolted?

Are the Plates Riveted or Bolted?

Pitch of Stays in Front 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

Threads per Inch

Diar. of Stays Approved

.. .. in Boilers

Material

Thickness of Combustion Chamber Stays Approved

.. .. in Boilers

Pitch of Screwed Stays in C.O. Tops

Threads per Inch

Diar. of Stays Approved

.. .. in Boilers

Material

Thickness of Combustion Chamber Backs Approved

.. .. in Boilers

Pitch of Screwed Stays in C.O. Heads

Threads per Inch

Diar. of Stays Approved

.. .. in Boilers

Material

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

Thickness of Combustion Chamber Bottoms

No. of Stays over each Water Chamber



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VERTICAL DONKEY BOILERS

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.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

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?                      Thickness of Plates

Internal Radius of Dished Ends

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?                      Thickness of Plates

External Radius of Dished Crowns

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 Lengths

Material

Height, Width or Diameter

Internal Diar.

Thickness

How are Joints secured?

Date of Hydraulic Test

Test Pressure

No. of Lengths

Material

Height, Width or Diameter

Internal Diar.

Thickness

How are Joints secured?

Date of Hydraulic Test

Test Pressure

3  
1/2  
1/4  
20.4.02  
24.0.02



## 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	20. 4. 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			

## SUPERHEATERS

## EVAPORATORS

No.	
Type	
Tons per Day	
Material	
Working Pressure	
Date of Test	
Test Pressure	
Date of Test	
Test Pressure	

## FEED WATER HEATERS

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

## FEED WATER FILTERS

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

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.
Swanwick	10.0	10.0	380	
Capacity	91	10.0	380	
Current Alternating or Continuous	Continuous			
Single or Double Wire System	Double wire			
Position of Dynamometer	On steering engine platform			
Main Switch Board	On lower platform starboard side			
No. of Circuits to which, Distances are provided on Main Switch Board				
Particulars of these Circuits				

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*  
*Makers of Dynamos*  
*Capacity*  
*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:—*

General	Number of Lights	Number of Motors	Number of Pumps	Number of Fans	Number of Hoists	Number of Other Appliances

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 *3.5.09* 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 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. *"Danica"*

as ascertained by *me* from personal examination

*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.C.	Cub. ft.	:	:	
		£	:	:
Testing, &c. ...		:	:	
		£	:	:
Expenses ...		:	:	
Total ...	£	:	:	

It is submitted that this Report be approved,

*John Barr* for Chief Surveyor.

Approved by the Committee for the Class of M.B.S.\* on the *23<sup>rd</sup> December 1929*

Fees advised  
 Fees paid



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