No. 2220

RETAIN

THE BRITISH CORPORATION FOR THE SURVEY

AND

REGISTRY OF SHIPPING.

Report No. 2235 No. in Register Book 3618

"EMPIRE ROTHER"

S.S. "DELAWARE" EX "IMARI" N/V MANITOULIN

Makers of Engines MACCOLL & POLLOCK

Works No. 365

Makers of Main Boilers MACCOLL & POLLOCK

Works No. 365

Makers of Donkey Boiler NONE

Works No. ✓

NOTED TRO S

NOTED 42 E

MACHINERY.



14

No.

# THE BRITISH CORPORATION FOR THE SURVEY AND REGISTRY OF SHIPPING.

Report No. ..... No. in Register Book .....

Received at Head Office 4th June 1929.

Surveyor's Report on the New Engines, Boilers, and Auxiliary Machinery of the Single ~~Triple~~ ~~Twin~~ ~~Quadruple~~ Screw STEAMER.

"IMARI"

Official No. 149497 Port of Registry Newcastle

Registered Owners Inland Steamship Coy. Limited Winnipeg Canada.

Engines Built by Macoll & Pollock.

at Sunderland.

Main Boilers Built by Macoll & Pollock.

" at Sunderland.

Donkey " " None.

at

Date of Completion 27.3.29.

First Visit 24.7.28 Last Visit 27.3.29 Total Visits 26.

## RECIPROCATING ENGINES.

Works No. 365 No. of Sets One Description Triple expansion surface condensing 3 cranks.

No. of Cylinders each Engine 3. No. of Cranks 3

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?

Type of H.P. Valves, Piston valve.

1st I.P. " "D" Slide Valve.

2nd I.P. " —

L.P. " "D" Slide valve.

" Valve Gear Stephenson Link.

" Condenser Surface & flow. Cooling Surface 403. sq. ft.

Diameter of Piston Rods (plain part) 4" Screwed part (bottom of thread) 2.03.

Material " ~~Ingot Steel~~ Rolled steel bar.

Diar. of Connecting Rods (smallest part) $3\frac{7}{8}$" Material Iron.

" Crosshead Gudgeons $4\frac{1}{8}$" Length of Bearing 2 - $3\frac{7}{8}$" Material Steel.

No. of Crosshead Bolts (each) 4 Diar. over Thrd. $1\frac{3}{4}$" Thrds. per inch 6 Material Steel.

" Crank Pin " " 2 " $2\frac{1}{4}$" " 6 "

" Main Bearings 6 Lengths $4\frac{7}{8}$"

" Bolts in each 2 Diar. over Thread $2\frac{1}{8}$" Threads per inch 4 Material Steel.

" Holding Down Bolts, each Engine 50 Diar. 12 @ 1", 6 @ $1\frac{1}{4}$", 34 @ $1\frac{3}{8}$" No. of Metal Chocks 50.

Are the Engines bolted to the Tank Top or to a Built Seat? Tank top.

Are the Bolts tapped through the Tank Top and fitted with Nuts Inside? Yes.

If not, how are they fitted? ✓



Connecting Rods, Forged by Brown Bros. Stockton. Iron.

Piston " " } @

Crossheads " Brown Bros Stockton Steel.

Connecting Rods, Finished by MacColl & Pollock Ltd. Sunderland.

Piston " " do

Crossheads, " do

Date of Harbour Trial 13.2.29.

" Trial Trip 27.3.29

Trials run at Whitby Mile

Were the Engines tested to full power under Sea-going conditions? ~~yes.~~ No.

If so, what was the I.H.P.? 730 Revols. per min. 104

Pressure in 1st I.P. Receiver, 180 lbs., 2nd I.P., 45 lbs., L.P., $3\frac{1}{2}$ lbs., Vacuum, $25\frac{1}{4}$ ins.

Speed on Trial 8.35

If the Conditions on Trial were such that full power records were not obtained give the following estimated data:— Fog during trials

Builders' estimated I.H.P. Revols. per min.

Estimated Speed

H.P. Cylinder tested 11.9.28. BC.3395. No 270. J.L.

## TURBINE ENGINES.

Works No. Type of Turbines

No. of H.P. Turbines No. of I.P. No. of L.P. No. of Astern

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

Is Single or Double Reduction Gear employed?

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

Revols. per min. of H.P. Turbines at Full Power S.H.P.

" " I.P. " "

" " L.P. " "

" " 1st Reduction Shaft

" " 2nd "

" " Propeller Shaft

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial Knots. Propeller Revols. per min. S.H.P.

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by



## ~~DESCRIPTION OF INSTALLATION.~~

Engine Stop valve plugged at base with $\frac{3}{4}$" gas brass plug securely fitted.

Tested 2 Aux & N.R. valves. 360 lbs □" 5.11.78.

Condenser. Tested 5.11.78.

Tested 2 main boiler stop valves. 15.11.78.

" " whistle " " " 15.11.78.

" main & donkey check valves 15.11.78.

" C.S. Water gauge standards. 7.11.78.

## 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

Revols. 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

" 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.

## SHAFTING.

Are the Crank Shafts Built or Solid? Built.

No. of Lengths in each One. Angle of Cranks 120°

Diar. by Rule Actual $8\frac{3}{8}$" In Way of Webs $8\frac{1}{2}$"

" of Crank Pins $8\frac{3}{8}$" Length between Webs 8"

Greatest Width of Crank Webs $15\frac{3}{4}$" Thickness $15\frac{3}{16}$"

Least " " 12" " $5\frac{3}{16}$"

Diar. of Keys in Crank Webs $1\frac{3}{4}$" Length 4"

" Dowels in Crank Pins 1" Length 3" Screwed or Plain Screwed

No. of Bolts each Coupling 6 Diar. at Mid Length 2" Diar. of Pitch Circle 12"

Greatest Distance from Edge of Main Bearing to Crank Web $\frac{3}{16}$"

Type of Thrust Blocks Multi-Collar.

No. " Rings Four.

Diar. of Thrust Shafts at bottom of Collars $8\frac{3}{8}$" No. of Collars Four.

" " Forward Coupling 8" At Aft Coupling 8"

Diar. of Intermediate Shafting by Rule None Actual No. of Lengths

No. of Bolts, each Coupling Diar. at Mid Length Diar. of Pitch Circle

Diar. of Propeller Shafts by Rule Actual $9\frac{1}{8}$" At Couplings $8\frac{3}{8}$"

Are Propeller Shafts fitted with Continuous Brass Liners? Yes.

Diar. over Liners $10\frac{5}{16}$" Length of After Bearings $3'-0\frac{1}{2}$"

Of what Material are the After Bearings composed? Lignum Vitae.

Are Means provided for lubricating the After Bearings with Oil? Yes.

" " to prevent Sea Water entering the Stern Tubes? No.

If so, what Type is adopted?



## SKETCH OF CRANK SHAFT.

Same as Lachinedoc 353 contract.

No. of Blades each Propeller Four Fitted or Solid? Fitted.

Material of Blades C. I & Steel mixed Boss Cast Iron.

Diar. of Propellers 12'-0" Pitch 9'-4¼" Surface (each 46 S. ft.)

Coefficient of Displacement of Vessel at ⅔ Moulded Depth

| | | | |
|---|---|---|---|
| Crank Shafts Forged by | Fife Forge Coy. | Material | I. Steel. |
| ,, Pins ,, | " | | " |
| ,, Webs ,, | " | | " |
| Thrust Shafts ,, | Burmeister & Wain | ,, | I. Steel. |
| Intermed. ,, ,, | None. | | " |
| Propeller ,, ,, | Burmeister & Wain. | ,, | I. Steel. |
| Crank ,, Finished by | Fife Forge Coy. | | |
| Thrust ,, ,, | MacColl & Pollock Ltd. | | |
| Intermed. ,, ,, | None | | |
| Propeller ,, ,, | MacColl & Pollock Ltd. | | |

(a)

STAMP MARKS ON SHAFTS.

Crank shaft. BC. 207. R.S. 8.9.28. T. 140/141.

Thrust Shaft B.C.5 5.9.28/B J.L. 15.11.29

Tail Shaft. B.C.5 5.9.28/B J.L. 15.11.29



SKETCH OF PROPELLER SHAFT.

Same as "Lachmedoc". C. 353.

## PUMPS, ETC.

No. of Air Pumps One. Diar. 13" Stroke 16"

Worked by Main or Independent Engines? Main.

No. of Circulating Pumps One Diar. 10" Stroke 10"

Type of " Independent duplex. 9" x 10" x 10"

Diar. of " Suction from Sea 6½"

Has each Pump a Bilge Suction with Non-return Valve? Yes. Diar. 2"

What other Pumps can circulate through Condenser? Ballast pump.

No. of Feed Pumps on Main Engine 2. Diar. 2½" Stroke 16"

Are Spring-loaded Relief Valves fitted to each Pump? Yes

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

No. of Independent Feed Pumps Diar. Stroke

What other Pumps can feed the Boilers? General Service donkey 6" x 4" x 6"

No. of Bilge Pumps on Main Engine 2. Diar. 2½" Stroke 16"

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

No. of Independent Bilge Pumps

What other Pumps can draw from the Bilges? Ballast. Pump.

Are all Bilge Suctions fitted with Roses? Mud boxes.

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

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

Are they placed so as to be easily accessible? Yes.

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

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

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



One 6" hold suction additional in this vessel from hat in tank tops forward of after bulkhead in hold in centre and through a N.R. valve on tank box in engine-room.

## BOILERS.

Works No. 365.

No. of Boilers Two Type Cylindrical multitubular.

Single or Double-ended Single

No. of Furnaces in each Two

Type of Furnaces Deighton

Date when Plan approved 25.7.28.

Approved Working Pressure 180 lbs □"

Hydraulic Test Pressure 320 lbs □"

Date of Hydraulic Test 26.10.28

" when Safety Valves set 23.1.29

Pressure at which Valves were set 180 lbs.

Date of Accumulation Test 23.1.29

Maximum Pressure under Accumulation Test 187 lbs.

System of Draught Howdons Forced

Can Boilers be worked separately? Yes

Makers of Plates ~~James Dunlop. Glasgow.~~ Wm Beardmore.

" Stay Bars " " "

" Rivets Rivet Bolt + Nut Co.

" Furnaces Deighton.

Greatest Internal Diar. of Boilers 10'-1 3/16"

" " Length " 10'-9 15/16"

Square Feet of Heating Surface each Boiler 1068.43

" " Grate " " 32.34

No. of Safety Valves each Boiler 1. Double Rule Diar. Actual 2½" ordinary

Are the Safety Valves fitted with Easing Gear? Yes

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

" Test Cocks " Three. " Salinometer Cocks One



B.C. TEST.

4630
T.P. 320
W.P. 180
J L
26.10.28

Boiler Test Mark, on each boiler.

Are the Water Gauges fitted direct to the Boiler Shells or mounted on Pillars? Pillars (C. Steel).

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

Are these Pipes connected to Boilers by Cocks or Valves? ✓

Are Blow-off Cocks or Valves fitted on Boiler Shells? Yes. Valves with double " shut off S.L. valve additional.

No. of Strakes of Shell Plating in each Boiler Same as S/S Lachinedoc.

" Plates in each Strake "Hamildoc."

Thickness of Shell Plates Approved "Wellandoc."

" " 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 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

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.C. Tops

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.C. Sides

Diar. " " Approved — Threads per Inch

" " " in Boilers

Material " "

Thickness of Combustion Chamber Backs Approved

" " " " in Boilers

Pitch of Screwed Stays in C.C. Backs

Diar. " " Approved — Threads per Inch

" " " in Boilers

Material " "

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

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 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 Lengths | 4 | | | |
| Material | Copper. | | | |
| Brazed, Welded or Seamless | S. D. | | | |
| Internal Diar. | 3½" | | | |
| Thickness | 7 W.G. | | | |
| How are Flanges secured ? | Brazed. | | | |
| Date of Hydraulic Test | 13.11.28 | | | |
| Test Pressure | 360 | | | |
| | G.L. | | | |

| | | | | |
|---|---|---|---|---|
| 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 | | | | |

## EVAPORATORS.

No. Type None. Tons per Day.

Makers

Working Pressure Test Pressure Date of Test

Date of Test of Safety Valves under Steam

## Exhaust FEED WATER HEATERS.

No. Type C. M. Type 17° 8 (a)

Makers Holden & Brooke Ltd.

Working Pressure – Test Pressure – Date of Test

## FEED WATER FILTERS.

No. One Type High Pressure Size (a)

Makers MacColl & Pollock.

Working Pressure 180 lbs Test Pressure 450 lbs. Date of Test 8/1/29 GHB.



## LIST OF DONKEY PUMPS.

| | | |
|---|---|---|
| Ballast donkey | 9½" x 11½" x 11" | MacColl & Pollock |
| G. S. pump. | 6" x 4" x 6" | – do – |
| Sanitary | 3½" x 3½" x 4" | Mumford |
| Fresh Water | – do – | – do – |
| Circulating Pump. | 9" x 10" x 10" | MacColl & Pollock. |
| Injector | 1½ N° 9 | Gresham & Craven. |

## SPARE GEAR.

| | | | | | |
|---|---|---|---|---|---|
| No. of Top End Bolts. | 2 | No. of Bot. End Bolts. | 2 | No. of Cylinder Cover Studs | |
| „ Coupling Bolts | 1 Set | „ Main Bearing Bolts | 2 | „ Valve Chest „ | |
| „ Junk Ring Bolts | 3 | „ Feed Pump Valves | 1 Set | „ Bilge Pump Valves | |
| „ H.P. Piston Rings | | „ I.P. Piston Rings | | „ L.P. Piston Rings | |
| „ „ Springs | | „ „ Springs | | „ „ Springs | |
| „ Safety Valve „ | 1. | „ Fire Bars | ½ set | „ Feed Check Valves | 1 main 1 aux. |
| „ Piston Rods | | „ Connecting Rods | | „ Valve Spindles | |
| „ Air Pump Rods | | „ Air Pump Buckets | | „ Air Pump Valves | ½ set |
| „ Cir. „ | | „ Cir. „ | | „ Cir. „ | 1 Set |
| „ Crank Shafts | | „ Crank Pin Bushes | | „ Crosshead Bushes | |
| „ Propeller Shafts | | „ Propellers | | „ Propeller Blades | 2 |
| „ Boiler Tubes | 3 plain | „ Condenser Tubes | 3 | „ Condenser Ferrules | 20 |

OTHER ARTICLES OF SPARE GEAR:—

24 assorted bolts & nuts
1 Set feed donkey valves
1 " Ballast " "
1 " Sanitary " "
1 Cwt of Bar
1 " " plate
1 " Iron various sizes
& Sheet metal.

## 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. |
|---|---|---|---|---|

Articles of Spare Gear for Refrigerating Plant carried on board:—

## ELECTRIC LIGHTING.

Installation Fitted by Swan Hunter & W. R. Ltd.

No. and Description of Dynamos One comp., wound

Makers of Dynamos Sunderland Forge & Eng Co Ltd.

Capacity " 91 Amperes, at 110 Volts, 380 Revols. per Min.

Current Alternating or Continuous Continuous

Single or Double Wire System Double.

Position of Dynamos In engine room on lower platform

" Main Switch Board near dynamo.

No. of Circuits to which Switches are provided on Main Switch Board 4.

Particulars of these Circuits:—

| Circuit. | Number of Lights. | Candle Power. | Current Required. Amps. | Size of Conductor. | Current Density. | Conductivity of Conductor. | Insulation Resistance per Mile. |
|---|---|---|---|---|---|---|---|
| | | | | | I.E.E. | | megohms |
| Navigation. | 4 | 60 W. | 3 | 7/.029 | Rule | 98% | 600 |
| | 2 | 30 | 3. | 7/.029 | " | 98% | 600 |
| Fd., Accom., | 19 | 30 | 14 | 7/.044 | " | 98% | 600 |
| | 13 | 16 C.P. | | | | | |
| Aft., Accom., | 19 | 30 W. | 14 | 7/.044 | " | 98% | 600. |
| | 26 | 16 C.P. | | | | | |
| Eng & Blr | 13 | 30 W. | 5 | 7/.029 | " | 98%. | 600 |
| rooms. | 3 | 16 C.P. | | | | | |

Total No. of Lights 99 No. of Motors driving Fans, &c. None No. of Heaters None

Current required for Motors and Heaters None.

Positions of Auxiliary Switch Boards, with No. of Switches on each None.

Are Cut-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits Yes

On Aux. „ „ each Auxiliary Circuit None

Wherever a Cable is reduced in size Yes

To each Lamp Circuit Yes

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

Are the Fuses of Standard Sizes? Yes

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

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

Smallest Single Wire used, No. 31/029 S.W.G., Largest, No. 19/072 S.W.G.

How are Conductors in Engine and Boiler Spaces protected? Lead Covered & Braided

„ „ Saloons, State Rooms, &c. Lead Covered Clipped to Structure

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp. Lead Covered & braided

(2) „ passing through Bunkers or Cargo Spaces Lead Covered in Telegraph Casing

(3) „ „ Deck Beams or Bulkheads Rubber bushes & W.T. Glands



Are all Joints in Cables properly soldered and thoroughly Insulated so that the efficiency of the Cables is unimpaired? None

Are all Joints in accessible positions, none being made in Bunkers or Cargo Spaces? None

Are all Hull Connections for Single-Wire Systems made with Screws of large Surface? None

Are the Dynamos, Motors, Main and Branch Cables, so placed that the Compasses are not injuriously affected by them? Yes

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

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

What does the Resistance amount to? 100,000 ohms Ohms.

Is the Installation supplied with a Voltmeter? Yes

„ „ „ an Ampere Meter Yes

Date of Trial of complete Installation 27.3.29 Duration of Trial 8 hours.

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

J. Laurie.

## 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. IMARI

as ascertained by us/me from personal examination

John Sundegren  Chas. Laurie

*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,

*Chief Surveyor.*

Approved by the Committee for the Class of **M.B.S.*** on the 12th June 1929

Fees advised

Fees paid

*Secretary.*