

No. 2324

TRANSFERRED TO  
L R. SYSTEM

THE BRITISH CORPORATION FOR THE SURVEY

AND  
REGISTRY OF SHIPPING.

RETAIN

Report No. 2314 No. in Register Book 3707

TRANSFERRED TO  
L R. SYSTEM

ss. "LOCHSHIEL"

Makers of Engines L. GARDNER & SONS LTD.

Works No. 28316

Makers of Main Boilers NONE

Works No. —

Makers of Donkey Boiler A. ANDERSON & SONS

Works No. 3063

MACHINERY.



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8. 14

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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 *30<sup>th</sup> October 1929*

Surveyor's Report on the New Engines, Boilers, and Auxiliary  
Machinery of the ~~Single Screw~~ *Single* Screw OIL MOTOR SHIP  
"LOCHSHIEL"

Official No. 160274. Port of Registry GLASGOW.

Registered Owners DAVID McBRAYNE & CO (1928) LTD.

Engines Built by *L Gardner & Sons Ltd*  
at *Patricroft - Manchester*

Main Boilers Built by ✓

at ✓

Donkey " A. ANDERSON & SONS.

at

*CARIN MOTHERWELL*

Date of Completion *19.9.29*

First Visit *24/4/29* Last Visit *18/9/29* Total Visits *28*

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## RECIPROCATING ENGINES.

Works No. 28316 No. of Sets 1 Description Vertical, two stroke,  
 cycle, single acting, compression ignition  
 heavy oil engine AIRLESS INJECTION.

No. of Cylinders each Engine Six No. of Cranks Six

Diars. of Cylinders  $12\frac{1}{2}$ " Stroke 15"

Cubic feet in each L.P. Cylinder 1066. Max Working Pressure 580 <sup>lbs</sup>

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

each Receiver?

## Main Air Compressors

Type of H.P. Valves No. 1 No. of Stages (each) 2

Stage 1st Stage Dia 7" Stroke  $3\frac{1}{2}$ " Pressure 75 <sup>lbs</sup>

2nd Stage "  $2\frac{7}{8}$ " "  $3\frac{1}{2}$ " " 360 <sup>lbs</sup>

## Aux Air Compressors

No. 1 No. of Stages (each) 2

1st Stage Dia  $5\frac{1}{2}$ " Stroke 3" Pressure 75 <sup>lbs</sup>

2nd Stage "  $2\frac{1}{4}$ " " 3" Cooling Surface " 360 <sup>lbs</sup>

Are Safety Valves fitted to Compressors? yes ho. 2 Dia  $\frac{1}{2}$ " &  $\frac{3}{4}$ "

Diameter of Piston Rods (plain part) " (bottom of threads)

Material " ✓

Diars. of Connecting Rods (smallest part)  $3\frac{3}{8}$ " Material M.S.

" Crosshead Gudgeons 5" Length of Bearing  $6\frac{3}{16}$ " Material Steel Case Hard.

No. of Crosshead Bolts (each) ✓ Diars. over Thrd. ✓ Thrds. per inch ✓ Material ✓

" Crank Pin " 2 "  $1\frac{3}{8}$ " " 8 " 3% Nickel Steel

" Main Bearings 7 Lengths Flywheel end 10", others  $7\frac{1}{4}$ "

" Bolts in each 4 Diars. over Thread  $\frac{7}{8}$ " Threads per inch Whit. Material MS 28/32T

" Holding Down Bolts, each Engine " 20 Diars. 1" No. of Metal Checks 20

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 Messrs Mitchell Shackletons & Co Ltd

Piston " " ✓

Crossheads, Pins " Case hardened steel bar. Industrial Steel Co Sheffield

Connecting Rods, Finished by L Gardner & Sons Ltd

Piston " " ✓

Crossheads, Pins " L Gardner & Sons Ltd

Date of Harbour Trial 12.9.29

SHOP " 9.7.29

" Trial Trip 18-9-29.

Trials run at FIRTH OF FORTH.

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

If so, what was the I.H.P.? NOT ASCERTAINED. Revols. per min. 298. SEE PAGE 4.

Pressure in 1st L.P. Receiver, — lbs., 2nd L.P., — lbs., L.P., — lbs., Vacuum, — ins.

Speed on Trial 8.95 knots.

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

data:—

Builders' estimated I.H.P. 300. Revols. per min. 290.

Estimated Speed

No of Compressed Air Reservoirs 4 Working Pressure 360 lbs <sup>sq</sup>

Dimensions 3, 15" x 8" x 8" Total Capacity 34 Cf Test Pressure 720 lbs <sup>sq</sup>

Description Solid drawn weldless steel

No and Dia. Safety Valves (each) Fitted to air compressor cylinders

Particulars of Fuel Pump Plunger type with ball valves 200 lbs

WORKED BY CRANKSHAFT FROM MAIN ENGINES.

Particulars of Cooling Water Circulators One plunger type pump driven directly from crankshaft

System of Governing Centrifugal Governor controls stroke of each fuel pump independently

System of Lubrication Forced to main bearings

## 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 —

Revs. per min. of H.P. Turbines at Full Power — S.I.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 Revs. per min. — S.I.P. —

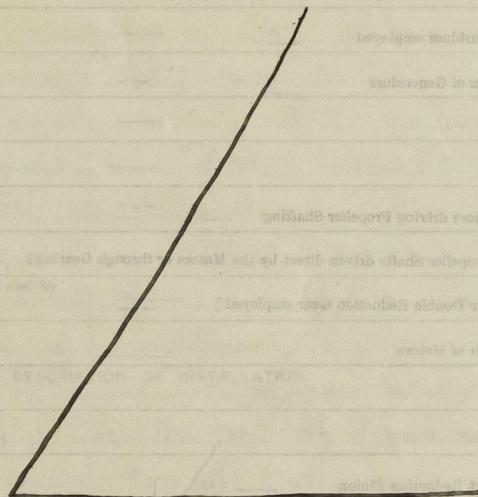
Turbine Spindles forged by —

Wheels forged or cast by —

Reduction Gear Shafts forged by —

" Wheels forged or cast by —

## DESCRIPTION OF INSTALLATION.



MANOEUVRING TRIALS 6 MOVEMENTS AHEAD & ASTERN, -12 IN ALL - DURING WHICH STARTING AIR PRESSURE ALTERED FROM 350 LBS TO 280 LBS/IN<sup>2</sup>

LUBRICATING OIL PRESSURE DURING POWER TRIALS = 16 LBS.

EXHAUST TEMPERATURE 360° LBS.



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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 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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PUMPS, ETC.

No. of Air Pumps  Diar.  Stroke

Worked by Main or Independent Engines?

No. of Circulating Pumps 1 Diar. 4" Stroke 3 1/2"

Type of " Plunger type

Diar. of " Suction from Sea 3" O.D. Copper pipe

Has each Pump a Bilge Suction with Non-return Valve? no Diar. no

What other Pumps can circulate through Condenser?

CIR COOLING

No. of ~~Feed~~ Pumps on Main Engine ONE Diar. 4" Stroke 3 1/2"

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

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

No. of Independent Feed Pumps - Diar. - Stroke -

What other Pumps can feed the CIR. ENGINES bottoms? GENERAL SERVICE PUMP.

No. of Bilge Pumps on Main Engine  Diar. 3" Stroke 3 1/2"

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

No. of Independent Bilge Pumps -

What other Pumps can draw from the Bilges? GENERAL SERVICE PUMP.

Are all Bilge Suctions fitted with Roses? YES.

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? COCKS & VALVES

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

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

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? YES.

Dia of Flywheel 49"  
Weight of Flywheel 3387 lbs

● AUX. SEMI-DIESEL ENGINE

AUX. ENGINE 3VT. SINGLE CYLINDER DIA = 5 1/2" STROKE = 6" REVS = 450.

ENGINE AT AFT END IS COUPLED TO 4 KW. DYNAMO. AND AT FORW END  
THRO' CLUTCH TO TWO STAGE AUX. COMPRESSOR SEE PAGE 2.



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## DONKEY BOILERS

Works No. 3063

No. of Boilers ONE Type CYLINDRICAL, MULTITUBULAR, RETURN TUBE, MARINE.

Single or Double-ended SINGLE END FIRED.

No. of Furnaces in each ONE

Type of Furnaces PLAIN

Date when Plan approved 11-4-29

Approved Working Pressure 130 lbs.

Hydraulic Test Pressure 245 lbs.

Date of Hydraulic Test 21-5-29

„ when Safety Valves set 12-9-29.

Pressure at which Valves were set 130 lbs.

Date of Accumulation Test 12-9-29

Maximum Pressure under Accumulation Test 132 lbs.

System of Draught CLYDE OIL FUEL SYSTEM LTD

Can Boilers be worked separately? —

Makers of Plates STEEL CO OF SCOTLAND.

„ Stay Bars J. Colville & Sons Ltd.

„ Rivets RIVET BOLT & NUT FACTORY.

„ Furnaces A. ANDERSON & SONS LTD LD 3063.

Greatest Internal Diam. of Boilers 5'-6"

„ „ Length „ 6'-0"

Square Feet of Heating Surface each Boiler 200  $\frac{1}{2}$

„ „ Grate „ „ —

No. of Safety Valves each Boiler 2 Rule Diam.  $1\frac{5}{32}$ " Actual  $1\frac{1}{2}$ "

Are the Safety Valves fitted with Easing Gear? YES.

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

„ Test Cocks „ 2 „ Salinometer Cocks ONE

B.C. TEST.
Nº 5251
R.L.G.
21.5.29

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

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? VALVES.

No. of Strakes of Shell Plating in each Boiler ONE.

„ Plates in each Strake ONE.

Thickness of Shell Plates Approved  $7/16$ "

„ „ in Boilers  $7/16$ "

Are the Rivets Iron or Steel? STEEL.

Are the Longitudinal Seams Butt or Lap Joints? BUTT.

Are the Butt Straps Single or Double? DOUBLE.

Are the Double Butt Straps of equal width? YES.

Thickness of outside Butt Straps  $3/8$ "

„ inside „  $1/2$ "

Are Longitudinal Seams Hand or Machine Riveted? HAND.

Are they Single, Double, or Treble Riveted? DOUBLE.

No. of Rivets in a Pitch TWO.

Diar. of Rivet Holes  $13/16$ " Pitch  $3\ 5/64$ "

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 ONE.

Are these Seams Hand or Machine riveted? HAND.

Diar. of Rivet Holes  $13/16$ " Pitch 2" © 2020

No. of Rows of Rivets in Back End Circumferential Seams ONE

Are these Seams Hand or Machine Riveted? HAND.

Diar. of Rivet Holes  $13/16$ " Pitch 2" Lloyd's Register

Size of Manholes in Shell  $15\ 1/2$ " Foundation

Dimensions of Compensating Rings  $2\text{'-}4\text{'}$  x  $2\text{'-}0\text{'}$  x  $5/8$ " RIVETS = 48

Thickness of End Plates in Steam Space Approved 9/16" DIRECT

" " " " " " in Boilers 9/16"

Pitch of Steam Space Stays 12"

Diar. " " " " Approved 1 3/4" Threads per Inch 6

" " " " " " in Boilers " " " "

Material of " " " STEEL.

How are Stays Secured? DOUBLE NUTS ONE INSIDE ONE OUTSIDE.

Diar. and Thickness of Loose Washers on End Plates 6 1/2" x 9/16"

" " " " Riveted " " STEEL -

Width " " Doubling Strips " -

Thickness of Middle Back End Plates Approved 9/16

" " " " " " 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 9/16"

" " " " " " in Boilers "

Pitch of Stays at Wide Spaces between Fireboxes -

Thickness of Doublings in " " -

Thickness of Front End Plates at Bottom Approved 9/16"

" " " " " " in Boilers "

No. of Longitudinal Stays in Spaces between Furnaces -



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2-4 x 2-0 x 5/8

Diar. of Stays Approved — Threads per Inch —

.. .. in Boilers —

Material .. —

Thickness of Front Tube Plates Approved  $9/16''$

.. .. in Boilers "

Pitch of Stay Tubes at Spaces between Stacks of Tubes  $8''$

Thickness of Doublings in .. .. —

.. Stay Tubes at .. ..  $5/16''$

Are Stay Tubes fitted with Nuts at Front End No.

Thickness of Back Tube Plates Approved  $9/16''$

.. .. in Boilers "

Pitch of Stay Tubes in Back Tube Plates  $6\frac{3}{4}''$  H. x  $6\frac{3}{4}''$  V.

.. Plain ..  $3\frac{3}{8}''$  H. x  $3\frac{3}{8}''$  V.

Thickness of Stay Tubes  $5/16'' = 12$ .

.. Plain .. 10WG. = 42

External Diar. of Tubes  $2\frac{1}{2}''$

Material .. IRON.

Thickness of Furnace Plates Approved  $\frac{1}{2}''$

.. .. in Boilers  $\frac{1}{2}''$

Smallest outside Diar. of Furnaces  $2'-8''$

Length between Tube Plates  $4'-1''$

Width of Combustion Chambers (Front to Back)  $18''$

Thickness of .. .. Tops Approved  $1\frac{5}{32}''$

.. .. in Boilers "

Pitch of Screwed Stays in C.C. Tops  $6''$   $8\frac{7}{8}''$

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Diar. of Screwed Stays Approved  $1\frac{1}{2}$ " Threads per Inch, 9.

" " " in Boilers "

Material " " STEEL

Thickness of Combustion Chamber Sides Approved  $1\frac{5}{32}$ "

" " " " in Boilers "

Pitch of Screwed Stays in C.C. Sides  $7\frac{1}{2}$ "

Diar. " " Approved  $1\frac{1}{4}$ " Threads per Inch 9

" " " in Boilers "

Material " " STEEL.

Thickness of Combustion Chamber Backs Approved  $1\frac{5}{32}$ "

" " " " in Boilers "

Pitch of Screwed Stays in C.C. Backs  $7\frac{1}{4}$ "  $7\frac{5}{8}$ "

Diar. " " Approved  $1\frac{1}{2}$ " Threads per Inch 9

" " " in Boilers "

Material " " STEEL.

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

Thickness of Combustion Chamber Bottoms  $1\frac{5}{32}$ "

No. of Girders over each Wing Chamber 6

" " " Centre "

Depth and Thickness of Girders 4" 2 PLATES  $\frac{5}{8}$ " THICK.

Material of Girders STEEL

No. of Stays in each ONE.

No. of Tubes, each Boiler 54

Size of Lower <sup>HAND</sup> Manholes 6" x 4"

## VERTICAL DONKEY BOILERS.

SEE PAGES 14-22

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 —

Are " " fitted with Easing Gear? —

Date of Hydraulic Test —

Date when Safety Valves set —

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Diar. —

Test Pressure —  
Pressure on Valves —

## EVAPORATORS.

No.	Type	Tons per Day
Makers		
Working Pressure	Test Pressure	Date of Test
Date of Test of Safety Valves under Steam		

## FEED WATER HEATERS.

No.	Type	
Makers		
Working Pressure	Test Pressure	Date of Test

## FEED WATER FILTERS.

No.	Type	Size
Makers		
Working Pressure	Test Pressure	Date of Test

## LIST OF DONKEY PUMPS.

DESCRIPTION	MAKERS	SIZE	N <sup>o</sup>
FEED PUMP (DONKEY)	DAWSON & DOWNIE	5' x 3 1/4" x 6"	8876
SUCTIONS :- FORD PEAK, MAIN BILGE, DIRECT BILGE, FRESH WATER TANK			
DISCHARGES :- BOILER, C.I.R.M.E., DECK, OVERBOARD, FORD PEAK.			

DESCRIPTION	MAKERS	SIZE	N <sup>o</sup>
FEED WATER PUMP	DAWSON & DOWNIE	3 1/2" x 2 1/2" x 4"	9084

SUCTIONS :- FRESH WATER TANK, EXHAUST TANK, SEA.

DELIVERIES :- BOILER.

DESCRIPTION	MAKERS
WINDLASS	CLARKE CHAPMAN & CO LTD.

CLYDE OIL FUEL INSTALLATION N<sup>o</sup> 386.

FAN MOTOR, HUGH SCOTT BELFAST 2 H.P. 110V, 2500-3100 REVS N<sup>o</sup> D6046.

*1. Fuel pump suction ball valves for all pumps*  
*2. Fuel pump delivery " " " " "*  
*3. Relief valves " " " " "*  
*4. Pressure gauges for all pumps*  
*5. Ball valves for all pumps*  
*6. Needle (Feed Pump) " " " " "*  
*7. Spray covers & screws*  
*8. Piston rings (see above)*  
*9. Piston guides*  
*10. Piston pins*  
*11. Piston pins (see above)*  
*12. Piston pins (see above)*  
*13. Piston pins (see above)*  
*14. Piston pins (see above)*  
*15. Piston pins (see above)*  
*16. Piston pins (see above)*  
*17. Piston pins (see above)*  
*18. Piston pins (see above)*  
*19. Piston pins (see above)*  
*20. Piston pins (see above)*  
*21. Piston pins (see above)*  
*22. Piston pins (see above)*  
*23. Piston pins (see above)*  
*24. Piston pins (see above)*  
*25. Piston pins (see above)*  
*26. Piston pins (see above)*  
*27. Piston pins (see above)*  
*28. Piston pins (see above)*  
*29. Piston pins (see above)*  
*30. Piston pins (see above)*  
*31. Piston pins (see above)*  
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*41. Piston pins (see above)*  
*42. Piston pins (see above)*  
*43. Piston pins (see above)*  
*44. Piston pins (see above)*  
*45. Piston pins (see above)*  
*46. Piston pins (see above)*  
*47. Piston pins (see above)*  
*48. Piston pins (see above)*  
*49. Piston pins (see above)*  
*50. Piston pins (see above)*

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## SPARE GEAR LIST

No. of Top End Bolts,	No. of Bot. End Bolts.	No. of Cylinder Cover Studs
" Coupling Bolts	" Main Bearing Bolts	" Valve Chest "
" Junk Ring Bolts	" Feed Pump Valves	" Bilge Pump Valves
" Main Piston Rings	" I.P. Piston Rings	" L.P. Piston Rings
" " Springs	" " Springs	" " Springs
" Safety Valve "	" Fire Bars	" Feed Check Valves
" Piston Rods	" Connecting Rods	" Valve Spindles
" Air Pump Rods	" Air Pump Buckets	" Air Pump Valves
" Cir. "	" Cir. "	" Cir. "
" Crank Shafts	" Crank Pin Bushes	" Crosshead Bushes
" Propeller Shafts	" Propellers	" Propeller Blades
" Boiler Tubes	" Condenser Tubes	" Condenser Ferrules

## OTHER ARTICLES OF SPARE GEAR:-

- 1 Complete fuel injection valve & 6 strainers  
 24 Air inlet valve flaps  
 Circulating Pump ram cup leather 2  
 Bilge " " " " 2 2  
 Spare springs for all purposes  
 Ball valves for all purposes
- |                              |                                    |
|------------------------------|------------------------------------|
| 6- NEEDLES (FEED PUMP).      | 2- SPRAYER CLAMPS & SCREWS.        |
| 6- PRIMING SCREWS.           | 12- JACK SCREWS.                   |
| 12- PISTON RINGS (SEE ABOVE) | 59- ASSORTED SPRINGS.              |
| 1- SPRAYER.                  | 6- FUEL PUMP SUCTION BALL VALVES.  |
| 1- PISTON GUIDE.             | 6- FUEL PUMP DELIVERY " "          |
| 60- CYLINDER JOINTS.         | 12- " " RELIEF VALVES.             |
| 1- PIPE EXPANDER.            | 72'- ASBESTOS CORD.                |
| 8- PACKING COLLARS.          | 29- COPPER ASBESTOS PICKINGS.      |
| 2 BREECH COVERS & SCREWS.    | 1- SPRAYER VALVE GRINDING SPINDLE. |

## - AUXILIARY ENGINE SPARES. -

- |                              |                                |
|------------------------------|--------------------------------|
| 1- PISTON HANDLE.            | 1- STARTING LAMP.              |
| 2- AIR VALVE FLAPS.          | 1- NIPPLE FOR SPRAYER.         |
| 1- PISTON GUIDE.             | 3- NEEDLES (FUEL PUMP)         |
| 1- FUEL PUMP SUCTION SPRING. | 1- PRIMING SCREW.              |
| 1- " " RAM "                 | 1- PISTON RING.                |
| 1- " " DELIVERY "            | 2- PUMP VALVES.                |
| 1- SPRAYER SPRING.           | 2- PUMP CUPS.                  |
|                              | 1- SPRAYER HOLE CLEANING TOOL. |

## AUX. PUMP SPARES.

- TWO VALVES 3 1/4" x 2 1/4" x 4"  
 " " 5" x 3 1/2" x 6"



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## ELECTRIC LIGHTING.

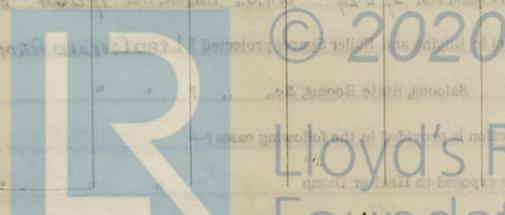
Installation Fitted by **CAMPBELL & ISHERWOOD LTD.**No. and Description of Dynamos *One DC Generated Compound*Makers of Dynamos *Bruce Peckles & Co. Ingers Edinburgh.*Capacity „ *4 Kw* Amperes, at *36.4* Volts, *110* Revols. per Min. *550*Current Alternating or Continuous *Continuous*Single or Double Wire System *DOUBLE WIRE SYSTEM.*Position of Dynamos *LOWER PLATFORM STAR. SIDE.*

„ Main Switch Board „ „ „ „

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.
1. ENGINE ROOM.	14.	16	7	3/029	1000A.	100%.	2500Ω
2. ACCOMMODATION	20.	16	10	3/036			
3. NAVIGATION.	6	3288	4	3/029			
4. FUEL HEATER & BLOWER.	-	-	29	7/044			

Total No. of Lights *40.* No. of Motors driving Fans, &c. *1.* No. of Heaters *1.*Current required for Motors and Heaters *29 AMPS.*

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

Particulars of these Circuits—	No. of Circuits to which Switches are provided on Main Switch Board	Main Switch Board	Position of Dynamo	Single or Double Wire System	Current Alternating or Continuous	Capacity	Makers of Dynamos	No. and Description of Dynamos	Installation Fitted by
Are Cut-outs fitted as follows?—									
On Main Switch Board, to Cables of Main Circuits	YES.								
On Aux. " " each Auxiliary Circuit	YES.								
Wherever a Cable is reduced in size									
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. 3/029. S.W.G., Largest, No. 7/064. S.W.G.									
How are Conductors in Engine and Boiler Spaces protected? LEAD COVERED ARMOURED & BRAIDED.									
" " 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 FIBRE FERRULES IN BRASS 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? —

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? 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? 2 MEGOHMS. Ohms.

Is the Installation supplied with a Voltmeter? YES.

" " " an Ampere Meter YES.

Date of Trial of complete Installation 18-9-29. Duration of Trial SIX HOURS.

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

Robert L. Greig.



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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 *M "LOCHSHIEL" "Brenda"*

as ascertained by *us* (from) personal examination

*Robert Craig*  
*Sidney L. Hayes*

Engineer Surveyors of 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,

*Jas Barr for* Chief Surveyor.

Approved by the Committee for the Class of M.B.S.\* on the 30<sup>th</sup> October 1929

Fees advised

Fees paid

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*Abrahamson*  
Secretary.