

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

so. "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

002401-002409-0087

No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. No. in Register Book

Received at Head Office *30th October 1929*

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the ~~Single Screw~~ *Single Screw* ~~Steam~~ *SC* ~~Steam~~ *SC* ~~Ship~~ *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 *8 1/2 1/2 1/2* ✓

Donkey *A. ANDERSON & SONS.*

at *CARFIN 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 1/2" Stroke 15"

Cubic feet in each L.P. Cylinder 1066 Max Working Pressure 580 ^{psi}

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 L.P. Dia 7" Stroke 3 1/2" Pressure 75 ^{psi}

2nd L.P. Dia 2 7/8" Stroke 3 1/2" Pressure 360 ^{psi}

Aux Air Compressors

No. 1 No. of Stages (each) 2

1st Stage Dia 5 1/2" Stroke 3" Pressure 75 ^{psi}

2nd Stage Dia 2 1/4" Stroke 3" Pressure 360 ^{psi}

Are Safety Valves fitted to Compressors? yes

Diameter of Piston Rods (plain part) 1/2" (bottom of threads) 3/4"

Material "✓"

Diars. of Connecting Rods (smallest part) 3 3/8" Material M.S.

" Crosshead Gudgeons 5" Length of Bearing 6 3/16" Material Steel Case Hard.

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

" Crank Pin " 2 " 1 3/8 " 8 " 3% Nickel Steel

" Main Bearings 7 Lengths Flywheel end 10", others 7 1/4"

" Bolts in each 4 Diars. over Thread 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., 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.

Revol. per min. 290.

Estimated Speed

No of Compressed Air Reservoirs 4 Working Pressure 360 lbs ^{psi}

Dimensions 3, 15" x 8" 1, 13" x 8" Total Capacity 34 Cf Test Pressure 720 lbs ^{psi}

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 2000 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? —

Diam. of 1st Reduction Pinion —

" 1st " Wheel —

Width —

Pitch of Teeth —

Estimated Pressure per lineal inch —

Diam. of 2nd Reduction Pinion —

" 2nd " Wheel —

Width —

Pitch of Teeth —

Estimated Pressure per lineal inch —

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

S.H.P. —

" " I.P. " " —

" " L.P. " " —

" " 1st Reduction Shaft —

" " 2nd " —

" " Propeller Shafts —

Total Shaft Horse Power —

Date of Harbour Trial —

" Trial Trip —

Trials run at —

Speed on Trial —

Knots.

Propeller Revs. per min. —

S.H.P. —

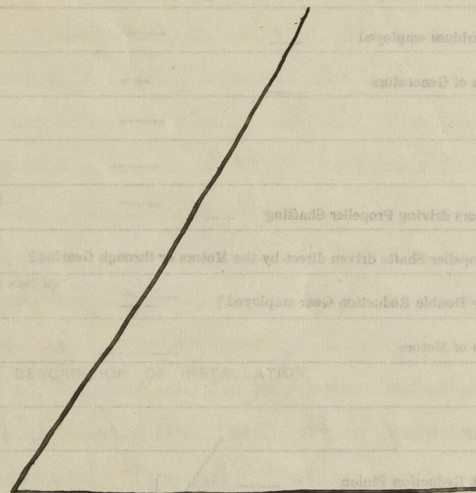
Turbine Spindles forged by —

" Wheels forged or cast by —

Reduction Gear Shafts forged by —

" Wheels forged or cast by —

DESCRIPTION OF INSTALLATION.

MANOEUVRING TRIALS. 6 MOVEMENTS AHEAD & ASTERN, 12 IN ALL, DURING WHICH.

STARTING AIR PRESSURE ALTERED FROM 350 lbs TO 280 lbs/sq"

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 —

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.H.P. —

Makers of Turbines —

" Generators —

" Motors —

" Reduction Gear —

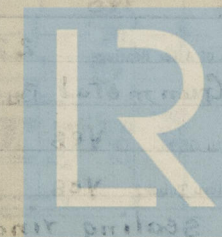
Turbine Splindles forged by —

" 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? **Solid**

No. of Lengths in each ☒ Angle of Cranks **60°**

Diar. by Rule **7.022"** Actual **7 $\frac{3}{4}$ "** In Way of Webs **7 $\frac{3}{4}$ "**

" of Crank Pins **7 $\frac{8}{4}$ "** Length between Webs **7 $\frac{1}{8}$ "**

Greatest Width of Crank Webs **9 $\frac{1}{2}$ "** Thickness **3 $\frac{15}{16}$ "**

Least " " **9 $\frac{1}{2}$ "** " **3 $\frac{15}{16}$ "**

Diar. of Keys in Crank Webs ☒ Length ☒

" Dowels in Crank Pins ☒ Length ☒ Screwed or Plain ☒

No. of Bolts each Coupling **12** Diar. at Mid Length **1 $\frac{1}{4}$ "** Diar. of Pitch Circle **15"**

ND. OF MAIN BEARINGS **7** INT. 20 $\frac{3}{8}$

Greatest Distance from Edge of Main Bearing to Crank Web **AFT. 21 $\frac{5}{8}$ "** **at after**

end in way of flywheel allowing $\frac{1}{2}$ " for rad. of bearing

Type of Thrust Blocks **Ball thrust bearing**

No. " Rings ☒

→ 5.118 in way of bearings. 5" for end 4 $\frac{15}{16}$ " in way of thread

Diar. of Thrust Shafts at bottom of Collars No. of Collars ☒

" " Forward Coupling ☒ At Aft Coupling **6"**

Diar. of Intermediate Shafting by Rule **4.867** Actual **5"** No. of Lengths **1**

No. of Bolts, each Coupling **8** Diar. at Mid Length **1"** Diar. of Pitch Circle **11"**

DIA. TOP OF TAPER = 5 $\frac{1}{4}$ "

Diar. of Propeller Shafts by Rule Actual **5 $\frac{3}{4}$ "** At Coupling **5 $\frac{1}{2}$ "**

Are Propeller Shafts fitted with Continuous Brass Liners? **No**

Diar. over Liners ☒ Length of After Bearings **22"**

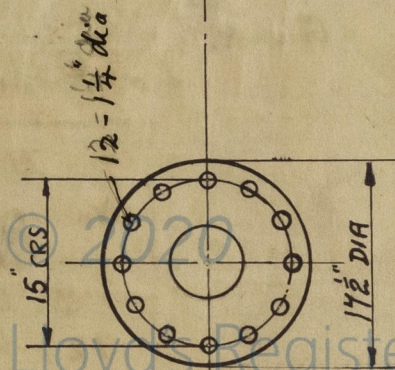
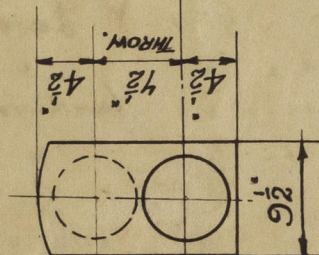
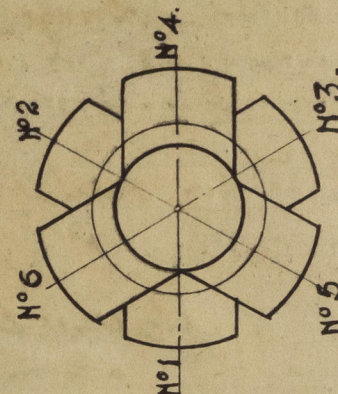
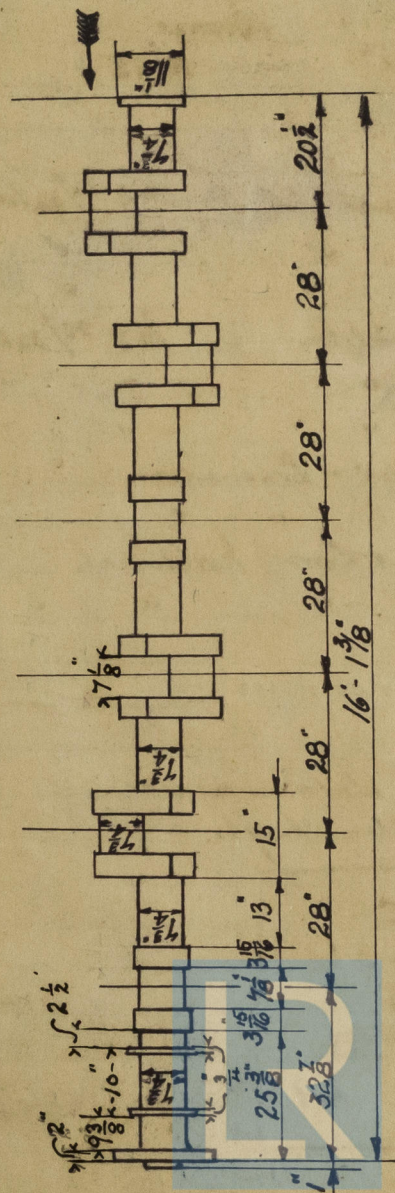
Of what Material are the After Bearings composed? **Gunmetal Bush.**

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

" " to prevent Sea Water entering the Stern Tubes? **Yes**

If so, what Type is adopted? **Rubber sealing ring**

SKETCH OF CRANK SHAFT.



VIEW IN DIRECTION OF ARROW.

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" 00 Copper pipe

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

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 ~~Engines~~ ^{CIR. ENGINES} ~~Engines~~? 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 Cock/ or Valves fitted with Spigots through the Hull Plating and Covering Plates or Flanges on the Outside? YES.

Dia of Flywheel 49" ^{DOWN}
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 D. Colville & Sons Ltd.
 „ Rivets RIVET BOLT & NUT FACTORY.
 „ Furnaces A. ANDERSON & SONS LTD 603063.
 Greatest Internal Diam. of Boilers 5'-6"
 „ „ Length „ 6'-0"
 Square Feet of Heating Surface each Boiler 200 4
 „ „ 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 **$3\ 5/16$ "**

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"**

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"**

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

Dimensions of Compensating Rings **$2\text{'-}4\text{'-} \times 2\text{'-}0\text{'-} \times 5/8\text{'-}$** **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 $1\frac{3}{4}"$ 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 $6\frac{1}{2}" \times 9/16"$

" " " Riveted " " —

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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Diam. 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 Diam. of Tubes $2\frac{1}{2}''$

Material .. IRON.

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

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

Smallest outside Diam. 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 $6'' \ 8 \ 7''$

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Diam. 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 $7\frac{1}{2}"$

Diam. " " Approved $1\frac{1}{2}"$ 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 $7\frac{1}{4}"$ $7\frac{5}{8}"$

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

" " " in Boilers "

Material " " STEEL.

Are all Screwed Stays fitted with Nuts inside C.C.? 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 ^{HAND} Manholes 6" x 4"

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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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FoundationDiar. —
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	No
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	No
FEED WATER PUMP	DAWSON & DOWNIE	3 1/2" x 2 1/4" x 4"	9084

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

DELIVERIES:- BOILER.

WINDLASS CLARKE CHAPMAN & CO LTD.

CLYDE OIL FUEL INSTALLATION No 386.

FAN MOTOR, HUGH SCOTT BELFAST 2 HP. 110V. 2500-3100 REVS No D6046.

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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
 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 BREACH 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 General Compound*Makers of Dynamos *Bruce Peckles & Co. Engs 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.**

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

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. Neig.

Are Out-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 Out-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 ARMOURD & 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**



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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} ~~me~~ from personal examination

Robert H. Greig
Sidney L. Jones
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,

James Barr for Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the 30th October 1929

Fees advised

Fees paid

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Secretary.