

Rpt. 13.

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 42040

Port of GLASGOW Date of First Survey 27.2.22 Date of Last Survey 16.6.22 No. of Visits 12
 No. in Reg. Book 38464 on the Iron or Steel S.S. "MULBERA" Port belonging to GLASGOW
 Owners THE BRITISH INDIA STEAM NAV. CO. LTD. Built at LINTHOUSE By whom MESRS ALEX. STEPHEN & SON LTD When built 1922
 Yard No. 496 Electric Light Installation fitted by MESRS ALEX. STEPHEN & SON LTD When fitted 1922

- TOTAL K.W. : 146 -

DESCRIPTION OF DYNAMO, ENGINE, ETC.

TWO COMPOUND WOUND DYNAMOS, (By Messrs Newton Bros. Derby), EACH DIRECT COUPLED TO A COMPOUND ENGINE, ENCLOSED TYPE BY MESSRS SHANKS & CO. ABERDEEN.
 Capacity of Dynamo 800 Amperes at 100 Volts, whether continuous or alternating current CONTINUOUS
 Where is Dynamo fixed ENGINE RM. Whether single or double wire system is used DOUBLE
 Position of Main Switch Board ENGINE RM. having switches to groups AS SHOWN ON CONTINUATION OF LIGHTS, &c., AS BELOW SHEET.
 Positions of auxiliary switch boards and numbers of switches on each NONE

CIRCUIT BREAKERS.

If YES are fitted on main switch board to the cables of main circuit YES and on each auxiliary switch board to the cables of auxiliary circuits YES and at each position where a cable is branched or reduced in size YES and to each lamp circuit YES
 If vessel is wired on the double wire system are fuses fitted to both flow and return wires or cables of all circuits including lamp circuits YES
 Are the fuses of non-oxidizable metal YES and constructed to fuse at an excess of 50% per cent over the normal current
 Are all fuses fitted in easily accessible positions YES Are the fuses of standard dimensions YES If wire fuses are used
 Are permanent instructions fitted on or near each switch board giving particulars of proper size of fuse for each circuit YES
 Are all switches and fuses constructed of incombustible materials and fitted on incombustible bases YES (SLATE OR PORCELAIN)
 Total number of lights provided for 450 arranged in the following groups:— SEE CONTINUATION SHEET.

	lights each of	candle power requiring a total current of	Amperes
A			
B			
C			
D			
E			
2 Mast head light with 1 lamps each of 32 C.P.			1.2 Amperes
2 Side light with 1 lamps each of 32 C.P.			1.2 Amperes

7-8 L. CLUSTERS, & 4 1/2 WATTS Cargo lights of 16 C.P. & 500 WATTS RESPECTIVELY candle power, whether incandescent or arc lights INCANDESCENT
 If arc lights, what protection is provided against fire, sparks, &c. NONE FITTED.

Where are the switches controlling the masthead and side lights placed IN CHART ROOM.

DESCRIPTION OF CABLES.

Main cable carrying 800 Amperes, comprised of 183 wires, each .093 S.W.G. diameter, 1.2 square inches total sectional area
 Branch cables carrying 9 1/2 Amperes, comprised of 19 wires, each .083 S.W.G. diameter, .1 square inches total sectional area
 Branch cables carrying 42 Amperes, comprised of 7 wires, each .069 S.W.G. diameter, .0225 square inches total sectional area
 Leads to lamps carrying 5 Amperes, comprised of 3 wires, each .036 S.W.G. diameter, .003 square inches total sectional area
 Cargo light cables carrying 5 Amperes, comprised of 110 wires, each .0076 S.W.G. diameter, .0048 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

LEAD COVERED VUL. I.R. CABLE, 600 C.M.A. USED THROUGHOUT THE INSTALLATION EXCEPT IN CARGO & MACHINERY SPACES THE CABLE IN THESE PLACES BEING VUL. I.R. LEAD COVERED, ARMOURED & BRAIDED.

Joints in cables, how made, insulated, and protected NO JOINTS

Are all the joints of cables thoroughly soldered, and the flux used not containing acids or other corrosive substances — Are all joints in accessible positions, none being made in bunkers, cargo spaces, or spaces which may at any time be used for carrying cargo, stores, or baggage —

Are there any joints in or branches from the cable leading from dynamo to main switch board NO
 How are the cables led through the ship, and how protected LEAD COVERED ARMOURED & BRAIDED, ALONG TWEEN DECKS FORE & AFT.



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DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible **YES**

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture
LEAD COVERED

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat **ASBESTOS BRAIDING OVER LEAD COVER & ARMOUR**

What special protection has been provided for the cables near boiler casings **ASBESTOS BRAIDING OVER LEAD COVER & ARMOUR**

What special protection has been provided for the cables in engine room **LEAD COVER, ARMOUR & BRAIDED**

How are cables carried through beams **FIBRE BUSHES** through bulkheads, &c. **GLANDS**

How are cables carried through decks **STEEL & LEAD DECK TUBES**

Are any cables run through coal bunkers **NO** or cargo spaces **YES** or spaces which may be used for carrying cargo, stores, or baggage **YES**

If so, how are they protected **LEAD COVER, ARMOUR & BRAIDED**

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage **NO**

If so, how are the lamp fittings and cable terminals specially protected

Where are the main switches and fuses for these lights fitted

If in the spaces, how are they specially protected

Are any switches or fuses fitted in bunkers **NO**

Cargo light cables, whether portable or permanently fixed **PORTABLE** How fixed

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel

How are the returns from the lamps connected to the hull

Are all the joints with the hull in accessible positions

Is the installation supplied with a voltmeter **YES** and with an amperemeter **YES**, fixed **ON MAIN SW. BOARD**

VESSELS BUILT FOR CARRYING PETROLEUM.

In vessels built for carrying petroleum, are all switches and fuses fitted in positions not liable to the accumulation of petroleum vapour or gas

Are any switches, fuses, or joints of cables fitted in the pump room or companion

How are the lamps specially protected in places liable to the accumulation of vapour or gas

The copper used is guaranteed to have a conductivity of not less than that of the Engineering Standards Committee's standard, and the wires are protected by tinning from the sulphur compounds present in the insulating material.

Insulation of cables is guaranteed to have a resistance of not less than **600** megohms per statute mile at 60° Fahrenheit after 24 hours' immersion in water, the test being made after one minute's electrification at not less than 500 volts and while the cable is still immersed.

The foregoing statements are a correct description of the Electric Light installation fitted by us on this vessel and we declare that it is at this date in good order and safe working condition.

ALEXANDER STEPHEN & SONS, LIMITED.

J.W. M. Olmud Secretary. Electrical Engineers Date **4th July, 1922**

COMPASSES.

Distance between dynamo or electric motors and standard compass

Distance between dynamo or electric motors and steering compass

The nearest cables to the compasses are as follows:—

A cable carrying	2	Amperes	1	feet from standard compass	1	feet from steering compass
A cable carrying	13.2	Amperes	14	feet from standard compass	20	feet from steering compass
A cable carrying	1	Amperes	15	feet from standard compass	10	feet from steering compass

Have the compasses been adjusted with and without the electric installation at work at full power **YES**

The maximum deviation due to electric currents, etc., was found to be **Nil** degrees on **Any** course in the case of the standard compass and **Nil** degrees on **Any** course in the case of the steering compass.

ALEXANDER STEPHEN & SONS, LIMITED.

J.W. M. Olmud Builder's Signature. Date **4th July, 1922**

GENERAL REMARKS.

This installation has been fitted on board under special survey. Tested under full working conditions found satisfactory.

It is submitted that this vessel is eligible for THE RECORD Elec. Light.

J.W. Rankin Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 25 JUL 1922**

Elec. Light.

S.S. MULBERA. YARD No 496.

PARTICULARS OF MAIN SWITCHBOARD CIRCUITS.

	LOAD	AREA	CABLE SIZE
MACHINERY SPACES LIGHTING	42	.0225	7/064
ENGINEERS QRS.	16	.0225	7/064
OFFICERS	12.2	.0225	7/064
FOR? CREW RADIATORS.	62	.1000	13/043
CAPTAINS BATH HEATER	NOT FITTED		
ENGINE ROOM FANS	87	.1000	13/043
1 st CL. SALOON & RADIATORS.	90	.1000	13/043
" " PASSENGER	97.25	.1000	13/043
FORCED DRAUGHT FAN STAR ^{SD}	250	.4000	61/033
1 st CL. SMOKE ROOM & MUSIC RM. RADIATORS.	57.2	.1000	13/043
INTERMEDIATE + 2 nd CL. PASSENGERS	54.8	.1000	13/043
2 nd CL. SALOON + RADIATORS.	90	.1000	13/043
OFFICERS RADIATORS.	52.5	.1000	13/043
ENGINEERS	70	.1000	13/043
CREW.	13.8	.0225	7/064
SERVICE.	33	.0225	7/064
CARGO CLUSTERS.	33.6	.0225	7/064
HALF WATT LAMPS.	20	.0225	7/064
LIFT	25	.0225	7/064
LATHE	15	.0225	7/064
LIFT + LATHE MOTORS.			
FORCED DRAUGHT FAN PORT	250	.4000	61/033
EMERGENCY CIRCUIT.	160	.2000	37/043
ENGINE TURNING MOTOR STAR ^{SD}	46	.1000	13/043
" " " PORT.	46	.1000	13/043

EMERGENCY SWITCHBOARD CIRCUITS.

NAVIGATION LIGHTS.	13.2	.0225	7/064
EMERGENCY BILGE PUMP.	90	.1000	13/043
W/T. SRT.	5	.0225	7/064
EMERGENCY LIGHTS.	24.6	.0225	7/064
W.T. DOORS.	90	.1000	13/043