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REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 42003.

Port of GLASGOW. Date of First Survey 8.7.1921 Date of Last Survey 9.6.1922 No. of Visits 11

No. in Reg. Book 33788 on the Iron or Steel T.S.S. TYRRHENIA belonging to LIVERPOOL.

Built at DALMUIR. By whom MESSRS WM BEARDMORE & CO LTD When built 1922.

Owners THE CUNARD S.S. CO LTD. Owners' Address

Yard No. 537 Electric Light Installation fitted by MESSRS WM BEARDMORE & CO LTD When fitted 1922.

RETAIN

DESCRIPTION OF DYNAMOS, ENGINE, ETC. — TOTAL KW = 800 —

MAIN :- 2 - 375 KW. D.C. COMPOUND WOUND GENERATORS 1000 R.P.M. ; DIRECT COUPLED TO TURBINE ENS. 600 HP = 4500/1000 R.P.M.

EMERGENCY :- 1 - 50 KW. " " " " A 750 " " " " THORNYCROFT OIL ENGINE.

Capacity of Dynamos MAIN :- 1700 Amperes at 220 Volts EMERG :- 100 Amperes at 225 Volts, whether continuous or alternating current CONTINUOUS CURRENT " "

Where is Dynamo fixed MAIN :- ENGINE ROOM EMERG :- COMPARTMENT AFT B DECK Whether single or double wire system is used 3 WIRE INSULATED

Position of Main Switch Board ENGINE RM ON SPECIAL PLATFORM having switches to groups (SEE SHEET 2) of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each 4 ON C DECK LETTERED A B C & D AND 2 ON A DK. LETTERED E & F

20 SWITCHES & 8 CIRCUIT BREAKERS ON A BOARD ; 21 SWITCHES ON B BOARD ; 26 SWITCHES ON C BOARD ; 28 SWITCHES & 4 CIRCUIT BREAKERS ON D BD

11 SWITCHES & 3 CIRCUIT BREAKERS ON E BOARD ; AND 7 SWITCHES & 1 CONTACTOR ON F BOARD.

If fuses are fitted on main switch board to the cables of main circuit NO FUSES; CIRCUIT BREAKERS FITTED 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 25 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

Total number of lights provided for 2,666. arranged in the following groups :—

A	2,076	GENERAL	lights each of	50 WATTS	~~candle power~~ requiring a total current of	570 Amperes
B	448	EMERGENCY	lights each of	50 "	~~candle power~~ requiring a total current of	123 Amperes
C	33	(GENERAL & EMERG)	(½ WATT PER C.P.) lights each of	100	candle power requiring a total current of	15 Amperes
D	2	[ENGINE]	(" ") lights each of	500	candle power requiring a total current of	5 Amperes
E	4	[BRIDGE]	(" ") lights each of	1000	candle power requiring a total current of	19 Amperes
	2		Mast head light with DOUBLE FILAMENT lamps each of	32	candle power requiring a total current of	1·8 Amperes
	2		Side light with DOUBLE FILAMENT lamps each of	32	candle power requiring a total current of	1·8 Amperes
	16		Cargo lights of (6 LAMPS PER CLUSTER) 180 WATTS PER CLUSTER ~~candle power~~, whether incandescent or arc lights			INCANDESCENT

2 MUG LIGHTS & 1 GREEN LIGHT. 32 CP EACH LIGHT.

If arc lights, what protection is provided against fire, sparks, &c.

Where are the switches controlling the masthead and side lights placed WHEEL HOUSE ON BRIDGE

DESCRIPTION OF CABLES.

Main cable carrying	1500	Amperes, comprised of	91	wires, each ·098 INS. ~~S.W.G.~~ diameter,	2·4	square inches total sectional area
Branch cables carrying	160	Amperes, comprised of	37	wires, each ·083 " ~~S.W.G.~~ diameter,	·2	square inches total sectional area
Branch cables carrying	50	Amperes, comprised of	19	wires, each ·064 " ~~S.W.G.~~ diameter,	·06	square inches total sectional area
Leads to lamps carrying	5	Amperes, comprised of	3	wires, each ·022 " ~~S.W.G.~~ diameter,	·002	square inches total sectional area
Cargo light cables carrying	3	Amperes, comprised of	7	wires, each ·044 " ~~S.W.G.~~ diameter,	·01	square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

V.I.R. TAPED & LEAD COVERED

V.I.R. TAPED & COVERED & ARMOURED

V.I.R. TAPED & LEAD IN CONDUIT TUBING & CASING

Joints in cables, how made, insulated, and protected NIL

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 pendants from the cable leading from dynamo to main switch board NO

How are the cables led through the ship, and how protected ON PORCELAIN INSULATORS IN CASING ; CONDUIT TUBING & CASING.

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 RUN IN CONDUIT TUBING

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat RUN IN CONDUIT TUBING

What special protection has been provided for the cables near boiler casings (N.R.) LEAD COVERED & ARMOURED ON PERFORATED PLATING

What special protection has been provided for the cables in engine room LEAD COVERED ON PERFORATED PLATING & CONDUIT BELOW FLOOR PLATES

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

How are cables carried through decks IN 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 IN CONDUIT TUBING

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage YES.

If so, how are the lamp fittings and cable terminals specially protected BY CAST IRON COVERS

Where are the main switches and fuses for these lights fitted OUTSIDE THESE SPACES

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 FIXED TO SOCKET, PORTABLE TO LAMP *How fixed* IN CONDUIT TUBING

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 —, *and with an ampermeter* —, *fixed* —

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 stand 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° Fahren after 24 hours' immersion in water, the test being made after one minute's electrification at not less than 500 v 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 de that it is in good and safe working condition.

FOR WILLIAM BEARDMORE & CO., LIMITED

A. J. Campbell

Electrical Engineers *Date* 21.6.22

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:— EACH COMPASS IS FITTED WITH AN 8 C.P. LAMP FOR ILLUMINATING PURPOSES.

A cable carrying	8.	*Amperes*	14	*feet from standard compass*	14	*feet from steering co*
A cable carrying	3	*Amperes*	10	*feet from standard compass*	12	*feet from steering co*
A cable carrying	.2	*Amperes*	in	*~~feet from~~ standard compass*	in	*~~feet from~~ steering co*

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.*

FOR WILLIAM BEARDMORE & CO., LIMITED

A. J. Campbell

Builder's Signature. *Date* 21.6.22

GENERAL REMARKS.

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

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

FEE: £51-10-0 a/c 14/6/22 Paid 4/6/22 [illegible]

L.J. 29/6/22.

J.S. Rankin

Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 27 JUN 1922

Elec. Light

J.D.

Rept. 9a.

Port of Glasgow Continuation of Report No. 42003 dated ——— on the

T. S. S. TYRRHENIA YARD No. 657.

DETAILS OF MAN SWITCHBOARD.

CIRCUIT	FEEDING	LOAD.	CABLE AREA	CABLE SIZE	
1	TURNING GEAR.	174 AMPERES	·182 SQ. INS.	37/·083	✓
2	BALLAST PUMP	120 "	·117 " "	37/·064	✓
3	SANITARY "	160 "	·182 " "	37/·083	✓
4	STEERING GEAR.	160 "	·182 " "	37/·083	✓
5	FORCED DRAUGHT FAN.	280 "	·3 " "	37/·103	—
6	" " "	280 "	·3 " "	37/·103	—
7	AUX.Y SWITCHBOARD "A."	728 AMP. AVERAGE	1·2 " "	91/·033 (2 PER POLE)	✓
8	" " " "B."	185 " "	·182 " "	37/·083	✓
9	" " " "C"	280 " "	·25 " "	37/·033	—
10	" " " "D"	504 " "	·75 " "	91/·103	—
11	" " " "E"	454 " "	·5 " "	61/·103	—
12	EMERGENCY S.B.D.	204 " "	·6 " "	91/·093	✓
13	BRINE PUMP WORKSHOP MOTOR }	58 AMPS	·06 " "	19/·064	✓
14	CO^2 M/C. No 1	80 "	·094 " "	19/·083	✓
15	" " " 2.	80 "	·094 " "	19/·083	✓
16	ENGINE ROOM.	30 "	·046 " "	19/·052	✓
17	BOILER "	22	·06 " "	19/·064	✓
18.	—	—			

— EMERGENCY SWITCHBOARD CIRCUITS. —

1	FORWARD BOARD "A"	22 AMPERES	·117 SQ. INS.	37/·064	✓
2	FOR'D MID BOARD "B"	30 "	·117 " "	37/·064	✓
3	AFT MID BOARD "C"	30 "	·117 " "	37/·064	✓
4	AFT BOARD "D"	55 "	·25 " "	37/·093	✓
5	EMERGENCY BILGE PUMP	60 "	·06 " "	19/·064	✓
6	WIRELESS SET		·06 " "	19/·064	✓
7	LIGHTING-UP MOTOR	2·5 "	·007 " "	7/·036	✓
8	BOAT CLUSTERS	24 "	·06 " "	19/·064	✓
9					