

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 17847

Port of GREENOCK Date of First Survey 3rd May 1921 Date of Last Survey 28 June 21 No. of Visits 21

No. in Reg. Book on the Iron or Steel Steamer "Gracia" Port belonging to

Built at GREENOCK By whom SCOTTS S. & E. & CO. When built 1921

Owners Donaldson & Co. Ltd. Owners' Address Glasgow

Yard No. 510 Electric Light Installation fitted by SCOTTS S. & E. & CO. (ELEC. DEPT.) When fitted 1921

DESCRIPTION OF DYNAMO, ENGINE, ETC. 1 MAIN DYNAMO, (LAURENCE SCOTT MAKE) DIRECT COUPLED TO A COMPOUND RECIP. ENGINE (BY MATTHEW PAUL DUMBARTON). DYNAMO:— 20 KILOWATT, 110 VOLTS, 300 R.P.M. ENGINE:— 1 CYLINDER 6 1/2" DIA., 1 CYLINDER 11" DIA. 6" STROKE.

Capacity of Dynamo 182 Amperes at 110 Volts, whether continuous or alternating current CONTINUOUS

Where is Dynamo fixed IN DYNAMO FLAT OVER ENGINE ROOM Whether single or double wire system is used DOUBLE

Position of Main Switch Board IN DYNAMO FLAT, PORT SIDE having switches to groups 2 OF LOWER 1 SPARE AND 8 of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each NO AUXILIARY SWITCHBOARDS, MAIN SWITCHBOARD IS SUPPLIED WITH KNIFE SWITCHES FOR DISTRIBUTION TO ABOVE CIRCUITS.

If fuses 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 200 per cent over the normal current 100

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 249 arranged in the following groups:—

A	49	13	lights each of ^{2 1/2}	25	50	candle power requiring a total current of	20.5	Amperes
B	7	2	lights each of ^{2 1/2}	25	50	candle power requiring a total current of	3.08	Amperes
C	14	1	lights each of	25	50	candle power requiring a total current of	4.3	Amperes
D	5	2	lights each of ^{2 1/2}	16	32	candle power requiring a total current of	2.8	Amperes
E	2	89	lights each of ¹⁶	25	50	candle power requiring a total current of	25.3	Amperes
	2		Mast head light with 2 lamps each of ^(DOUBLE FILAMENT)	32		candle power requiring a total current of	2.16	Amperes
	2		Side light with 2 lamps each of	32		candle power requiring a total current of	"	Amperes
	(6-6 LT. CLUSTERS)	36	Cargo lights of	50		candle power, whether incandescent or arc lights	INCANDESCENT.	

If arc lights, what protection is provided against fire, sparks, &c. NO ARC LIGHTS FITTED BUT.

6 - 300 WATT GAS FILLED LPS. USED TO AUGMENT CARGO LTS. & - 2 300 WATT G.F. FOR ENG. RM. LTS. ALSO.

4 - 16 CP. CARBON LPS. FOR SIGNAL STREAMER LTS TAKING 2.16 AMPS.

Where are the switches controlling the masthead and side lights placed IN NAVIGATION INDICATOR FITTED ON BRIDGE

DESCRIPTION OF CABLES.

Main cable carrying	182	Amperes, comprised of	37	wires, each	.083 ^(37/14)	S.W.G. diameter,	.200	square inches total sectional area
Branch cables carrying	65	Amperes, comprised of	19	wires, each	.064 ^(19/16)	S.W.G. diameter,	.060	square inches total sectional area
Branch cables carrying	8.6	Amperes, comprised of	7	wires, each	.052 ^(7/18)	S.W.G. diameter,	.0145	square inches total sectional area
Leads to lamps carrying	1.5	Amperes, comprised of	3	wires, each	.036 ^(3/20)	S.W.G. diameter,	.003	square inches total sectional area
Cargo light cables carrying	3.2	Amperes, comprised of	70	wires, each	.0076 ^(70/36)	S.W.G. diameter,	.0030	square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

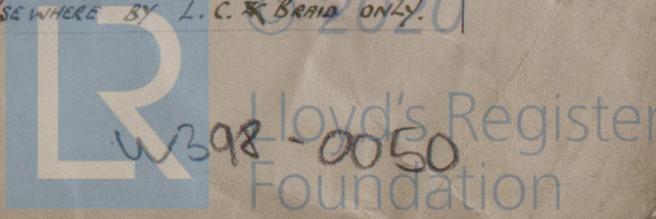
IN MACHINERY SPACES AND IN OPEN TUBING HAS BEEN USED WHERE FOUND NECESSARY — FOR GENERAL PRACTICE THE CABLE IN THESE SPACES IS PROTECTED BY LEAD COVERING, ARMOUR & BRAID.

Joints in cables, how made, insulated, and protected NO JOINTS UNLESS WHERE EXTENSIONS OR DISTRIBUTION BOXES ARE USED.

Are all the joints of cables thoroughly soldered, and the flux used not containing acids or other corrosive substances YES. 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 YES

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 CLIPPED TO STEEL & WOOD BULKHEADS — WHERE CABLES ARE CLIPPED TO STEEL BULKHEADS THEY ARE PROTECTED BY LEAD COVERING, ARMOURING, & BRAID ELSEWHERE BY L.C. & BRAID ONLY.



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 TUBING IN OPEN

& LC. A. & B. CABLES IN OPEN & IN ENG. RM. ETC.

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat RUN ON PERFORATED STEEL PLATES.

What special protection has been provided for the cables near boiler casings " " " " "

What special protection has been provided for the cables in engine room IF FOUND NECESSARY " " " " "

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

How are cables carried through decks BY 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 —

If so, how are they protected BY LEAD COVERING, ARMOURING & BRAID, WITH RUN CLIPPED TO MAIN FORE & AFT GIRDER.

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 —

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 Yes.

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 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.

SCOTT'S SHIPBUILDING & ENGINEERING COMPANY, LIMITED Electrical Engineers Date 29/6/21

Albrow

COMPASSES.

Distance between dynamo or electric motors and standard compass 10 FT.

Distance between dynamo or electric motors and steering compass 6 "

The nearest cables to the compasses are as follows:—

A cable carrying	<u>30.08</u>	Amperes	<u>5</u>	feet from standard compass	<u>5</u>	feet from steering compass
A cable carrying	<u>2.7</u>	Amperes	<u>10</u>	feet from standard compass	<u>8</u>	feet from steering compass
A cable carrying	<u>19.2</u>	Amperes	<u>18</u>	feet from standard compass	<u>15</u>	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 — degrees on — course in the case of the standard compass and — degrees on — course in the case of the steering compass.

SCOTT'S SHIPBUILDING & ENGINEERING COMPANY, LIMITED. Builder's Signature. Date 29/6/21

M. Hutchinson

GENERAL REMARKS.

Director. The fitting of the wires in this vessel are as stated in this report and appear to be in accordance with the Committee's requirements. The installation has been tested under full power and found all right. It is submitted that this vessel is eligible for THE RECORD. Elec Light. Rell 7/1/21

Kit 20

Gen £17.10-0. Feb 30/6/21 R.P.M.

James Jones. Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 5-JUL-1921

Elec. Light.

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

20.11.20.—Transfer.

