

S/S Cronos Electric Light arrangements.

No.	16.C.P.	32.C.P.	Plugs	Fans	Total Current	Fuse Boxes	Circuits	Position
1	84				50.4	1@12, 3@14, 1@16, 1@10.		Engine Room.
2	72				43.2	2@6, 1@4, 1@8, 1@10, 1@12, 1@14.		Boiler Room.
3		30			36.0	1@8, and 1@12,		Main, & Promenade Decks.
4		30			36.0	3@4, and 1@3.		Main, & Upper Decks.
5		30			36.0	3@16.		Upper Deck.
6		30			36.0	1@16.		Main Deck.
7	88				52.8	2@6, 1@10, 4@12.		Main, & Upper Deck.
8	75				45.0	2@4, 1@8, 1@10, 1@16.		Main Deck & Promenade.
9	61				36.6	2@4, 1@8, 2@14.		Main, & Promenade Deck.
10	87				52.2	1@2, 1@4, 1@6, 6@8, 1@10,		Main, & Upper Deck.
11	104				62.4	1@4, 6@6, 2@8, 2@8, 1@16.		Lower, Main & Upper Decks.
12	65				39.0	2@6, 1@10, 1@16.		Upper Deck.
13	66				39.6	2@6, 1@12, 1@16.		Upper Deck.
14	44		22	2	50.4	1@4, 1@6, 2@16		Main, & Lower Decks.
15	72	4	19	4	71.0	3@6, 1@8, 1@10, 4@12.		Main, Upper & Boat Deck.
16	43		33		58.8	1@8, 1@10, 2@12, 1@14.		Main Deck.
17	48		31		59.8	2@10, 2@12, 1@14.		Main Deck.
18	72		31	4	78.2	2@6, 2@8, 3@10, 1@12, 1@14		Main, Upper, & Boat Deck
19	42		20	2	47.2	1@4, 1@6, 1@14, 1@16.		Main & Lower Decks
20	Searchlight				40 to 60	1@2		Upper Deck Forward
21	motors					1@4, 1@8.		Main Deck

See attached report.



George Murdoch



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REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 20217

Port of Glasgow Date of First Survey Date of Last Survey No. of Visits
 No. in Reg. Book Jan of Steel T.S.S. Orontes Port belonging to London
 Built at Glasgow By whom Fairfield S.B. & E. Co When built 1902
 Owners Orient Steam Navigation Co Ltd Owners' Address London
 Yard No. 418 Electric Light Installation fitted by W. C. Martin & Co When fitted 1902

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Four Compound wound Dynamos direct coupled to four 2 crank Compound Steam engines with automatic shaft governor and automatic lubrication
 Capacity of Dynamos each 280 Amperes at 102 Volts, whether continuous or alternating current Continuous
 Where ~~are~~ ^{are} Dynamos fixed in special recess at aft end of engine room middle Platform
 Position of Main Switch Board near Dynamos having switches to 21 groups of lights, &c., as below
 Positions of auxiliary ~~switch~~ ^{fuse} boards and numbers of ~~switches~~ ^{fuses} on each 2

All as per list attached

If cut outs 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~~ reduced in size Yes and to each lamp circuit Yes
 If vessel is wired on the double wire system are cut outs fitted to both flow and return wires or cables of all circuits including lamp circuits Yes
 Are the cut outs of non-oxidizable metal Yes and constructed to fuse at an excess of fifty per cent over the normal current
 Are all cut outs 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 cut-outs constructed of incombustible materials and fitted on incombustible bases Yes

Total number of lights provided for _____ arranged in the following groups:—
 A _____ lights each of _____ candle power requiring a total current of _____ Amperes
 B All as per list lights each of _____ candle power requiring a total current of _____ Amperes
 C _____ lights each of _____ candle power requiring a total current of _____ Amperes
 D _____ lights each of _____ candle power requiring a total current of _____ Amperes
 E _____ lights each of _____ candle power requiring a total current of _____ Amperes
2 Mast head light with 2 lamps each of 32 candle power requiring a total current of 2.4 Amperes
2 Side light with 2 lamps each of 32 candle power requiring a total current of 2.4 Amperes
20 Cargo lights of 6 lights each 16 candle power, whether incandescent or arc lights incandescent

If arc lights, what protection is provided against fire, sparks, &c. Hexagonal metal framed lantern with glass panes fitted to arc lamp for canal purposes.
 Where are the switches controlling the masthead and side lights placed at Indicator in Wheelhouse

DESCRIPTION OF CABLES.

Main cable carrying 280 Amperes, comprised of 37 wires, each 12 L.S.G. diameter, .321 square inches total sectional area
 Branch cables carrying 60 Amperes, comprised of 19 wires, each 14 L.S.G. diameter, .097 square inches total sectional area
 Branch cables carrying 60 Amperes, comprised of 19 wires, each 14 L.S.G. diameter, .097 square inches total sectional area
 Leads to lamps carrying 1.8 Amperes, comprised of 1 wires, each 18 L.S.G. diameter, .0018 square inches total sectional area
 Cargo light cables carrying 3.6 Amperes, comprised of 108 wires, each _____ L.S.G. diameter, .006 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

H.C. Copper wire tinned, insulated with ^{pure} and Vulcanising rubber and tape, the whole vulcanised together, braided & Compounded. Enclosed in specially strong wood casing, and twin armoured in machinery space.
 Joints in cables, how made, insulated, and protected Carefully spliced and soldered then insulated with okonite and protected with adhesive strip. (joints only made where leads longer than manufactured lengths)
 Are all the joints of cables thoroughly soldered, resin only having been used as a flux 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 all accessible
 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 In strong wood casing in Alleyways and rooms Twin armoured cables in Machinery spaces.



DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible *yes except when Cargo in 3rd Class Accomodation space*
 What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *Twin Armoured lead sheathed or metal pipes according to surroundings*
 What special protection has been provided for the cables near galleys or oil lamps or other sources of heat *Twin Armoured wire*
 What special protection has been provided for the cables near boiler casings *Twin Armoured wire used*
 What special protection has been provided for the cables in engine room *Twin Armoured wire used*
 How are cables carried through beams *Insulating bushes through bulkheads, &c. Watertight glands*
 How are cables carried through decks *metal tubes fitted watertight to decks*
 Are any cables run through coal bunkers *No* or cargo spaces *No* or spaces which may be used for carrying cargo, stores, or baggage *Yes*
 If so, how are they protected *In specially strong wood casing fixed to deck protected by beams*
 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 *Strong metal guards*
 Where are the main switches and cut outs for these lights fitted *In passenger space above*
 If in the spaces, how are they specially protected _____
 Are any switches or cut outs fitted in bunkers *No*
 Cargo light cables, whether portable or permanently fixed *portable* How fixed *by special connector*
 In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel *double wire system*
 How are the returns from the lamps connected to the hull _____
 Are all the joints with the hull in accessible positions _____

VESSELS BUILT FOR CARRYING PETROLEUM.

In vessels built for carrying petroleum, are all switches and cut-outs fitted in positions not liable to the accumulation of petroleum vapour or gas _____
 Are any switches, cut outs, 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 installation is *at present* supplied with *2* voltmeters and *four* amperemeters fixed *on Switchboard*

The copper used is guaranteed to have a conductivity of *98* per cent. that of pure copper.
 Insulation of cables is guaranteed to have a resistance of not less than *2000* megohms per statute mile after 24 hours' immersion in seawater.

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.

W. C. Martin & Co Electrical Engineers Date *2nd Oct 1902*

COMPASSES.

Distance between dynamo or electric motors and standard compass *206 feet*
 Distance between dynamo or electric motors and steering compass *212 feet*
 The nearest cables to the compasses are as follows:—
 A cable carrying *10.2* Amperes *20* feet from standard compass *12* feet from steering compass
 A cable carrying *4.8* Amperes *20* feet from standard compass *12* feet from steering compass
 A cable carrying *.6* Amperes *20 to 1* feet from standard compass *12 to 1* 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 *a certain* course in the case of the standard compass and *nil* degrees on *the same* course in the case of the steering compass.

THE FAIRFIELD SHIPBUILDING AND ENGINEERING LIMITED. Builder's Signature. Date *4th October 1902.*

GENERAL REMARKS.

W. Simpson This installation has been fitted in accordance with the rules and satisfactorily tested under full power.

George Murdoch
 Surveyor to Lloyd's Register of British and Foreign Shipping.

Committee's Minute

Record "Electric Light"
 Glasgow, 13 OCT 1902

It is submitted that this installation appears to meet the Rule requirements.

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.