

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 72877.

Port of Liverpool Date of First Survey Mar 9/15 No. of Visits 1
 No. in Reg. Book 252 on the Iron or Steel s/s "Lapland" Port belonging to Liverpool
 Built at Belfast By whom Harland & Wolff, Ltd. When built 1908
 Owners International Navigation Co. Ltd. Owners' Address When fitted 1908
 Yard No. 393 Electric Light Installation fitted by Harland & Wolff, Ltd.

DESCRIPTION OF DYNAMO, ENGINE, ETC. Four open type compound engine having cylinders 12" x 20" by 12" stroke direct coupled to four compound wound dynamo having an output of 750 amps. at 100 volts when running at 230 R.P.M.
 Capacity of Dynamo 750 Amperes at 100 Volts, whether continuous or alternating current Continuous
 Where is Dynamo fixed at after end of Engine Room Whether single or double wire system is used Single
 Position of Main Switch Board in gallery in Engine Room having switches to groups I - XVIII of lights, &c., as below
 Positions of auxiliary switch boards and numbers of switches on each 7 Master fuse boards on Saloon Deck
6 Master fuse boards on Upper Deck 2 Master fuse boards on Stater Deck
1 Master fuse board on Promenade Deck (all foregoing without switches)
 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 —
 Are the fuses of non-oxidisable metal Yes and constructed to fuse at an excess of 100-150 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 2944 arranged in the following groups:— (See list attached)
 A lights each of 32 candle power requiring a total current of 1.2 Amperes
 B lights each of 32 candle power requiring a total current of 1.2 Amperes
 C lights each of 32 candle power requiring a total current of 1.2 Amperes
 D lights each of 32 candle power requiring a total current of 1.2 Amperes
 E lights each of 32 candle power requiring a total current of 1.2 Amperes
1 Mast head light with 1 lamp each of 32 candle power requiring a total current of 1.2 Amperes
2 Side lights with 1 lamp each of 32 candle power requiring a total current of 1.2 Amperes
11 Cargo lights of 7 of 160 C.P. each 4 of 10 amp. inc. lamps. whether incandescent or arc lights Both.
 If arc lights, what protection is provided against fire, sparks, &c. The arcs are enclosed in strong glass globes protected by wire guards.
 Where are the switches controlling the masthead and side lights placed in Wheel House

DESCRIPTION OF CABLES.

Main cable carrying 750 Amperes, comprised of 91 wires, each 11 S.W.G. diameter, 1.0 square inches total sectional area
 Branch cables carrying 31.8 Amperes, comprised of 19 wires, each 16 S.W.G. diameter, .06 square inches total sectional area
 Branch cables carrying 18.5 Amperes, comprised of 7 wires, each 16 S.W.G. diameter, .022 square inches total sectional area
 Leads to lamps carrying 2.8 Amperes, comprised of 7 wires, each 22 S.W.G. diameter, .0042 square inches total sectional area
 Cargo light cables carrying 4.2 Amperes, comprised of 145 wires, each 38 S.W.G. diameter, .0041 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC. The cables throughout are of 2500 Ω grade C.M.A standard. On deck the conductor is covered with one layer pure Para rubber, the core of vulcanizing rubber, one layer of prepared tape & the whole vulcanized together & braided. In Machy spaces after vulcanizing the cables are lead covered, raised spirally armoured with G.I. wire & finally braided.
 Joints in cables, how made, insulated, and protected Well soldered using resin as a flux & insulated with pure rubber & prepared tapes.

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 In strong wood casing in accommodation & in solid drawn steel tube when exposed to weather.

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 Cables are carried in solid drawn steel tube

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Cables are lead covered

What special protection has been provided for the cables near boiler casings covered & armored with G.I. wire & braided.

What special protection has been provided for the cables in engine room if w.t. in w.t. glands otherwise in fibre bushes.

How are cables carried through beams in fibre bushes through bulkheads, &c.

How are cables carried through decks in G.I. pipes lined with fibre

Are any cables run through coal bunkers Yes or cargo spaces No or spaces which may be used for carrying cargo, stores, or baggage Yes

If so, how are they protected Cables are carried in solid drawn steel tube.

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 heavy C.I. Bunker fittings with strong guards.

Where are the main switches and fuses for these lights fitted in storeroom.

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 Permanently How fixed in strong wood casing by extra terminal.

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel connected to 3/8" brass screw tipped into beams.

How are the returns from the lamps connected to the hull connected to 3/8" brass screw tipped into beams.

Are all the joints with the hull in accessible positions Yes

Is the installation supplied with a voltmeter Yes and with an amperemeter to read dynamo, fixed on main switchboard.

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 2500 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.

In Hauland & Wolff to

Electrical Engineers

Date 2. March 1915

COMPASSES.

Distance between dynamo or electric motors and standard compass to dynamo 279 ft to nearest motor 32 ft

Distance between dynamo or electric motors and steering compass 282 - - - 30

The nearest cables to the compasses are as follows:—

A cable carrying	Amperes	feet from standard compass	feet from steering compass
31.8	10	7	
25	32	30	
49.5	37	35	

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.

In Hauland & Wolff to

Builder's Signature.

Date 2. March 1915.

GENERAL REMARKS.

In my opinion, this installation is eligible to be recorded "Electric Light"

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

J.W.D.
25/3/15

B. G. Oxford

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

Committee's Minute LIVERPOOL. 19 MAR 1915

Electric Light.

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THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

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		101 lights each of 16 cps requiring a total current of 60.6 amps.									
a. Service	93	"	"	"	"	"	"	"	"	"	55.8
b. " "	138	"	"	"	"	"	"	"	"	"	82.8
" "	24	"	"	"	"	"	"	"	"	"	14.4
Service	120	"	"	"	"	"	"	"	"	"	72.0
" "	36	"	"	"	"	"	"	"	"	"	21.6
Daylight	82	"	"	"	"	"	"	"	"	"	49.2
" "	45	"	"	"	"	"	"	"	"	"	27.0
" "	116	"	"	"	"	"	"	"	"	"	69.6
Daylight	98	"	"	"	"	"	"	"	"	"	58.8
" "	106	"	"	"	"	"	"	"	"	"	63.6
Daylight	175	"	"	"	"	"	"	"	"	"	105.0
Passenger	42	"	"	"	"	"	"	"	"	"	25.2
" "	178	"	"	"	"	"	"	"	"	"	106.8
Passenger	119	"	"	"	"	"	"	"	"	"	71.4
Passenger	81	"	"	"	"	"	"	"	"	"	48.6
" "	127	"	"	"	"	"	"	"	"	"	76.2
Passenger	84	"	"	"	"	"	"	"	"	"	50.4
" "	118	"	"	"	"	"	"	"	"	"	70.8
Public Rooms	131	"	"	"	"	"	"	"	"	"	78.6
" "	50	"	"	"	"	"	"	"	"	"	30.0
" "	72	"	"	"	"	"	"	"	"	"	43.2
Public Rooms	150	"	"	"	"	"	"	"	"	"	90.0
" "	76	"	"	"	"	"	"	"	"	"	45.6
Cargo & Illuminations	314	12 amp a/c lamps									236.4
Officers & Signals	47	lights each of 16 cps									33.0
Engine Room Port	42	"	"	"	"	"	"	"	"	"	25.2
Stoke hold Port	52	"	"	"	"	"	"	"	"	"	31.2
Stoke hold Starbd.	61	"	"	"	"	"	"	"	"	"	36.6
Engine Room Starbd.	62	"	"	"	"	"	"	"	"	"	37.2
Winkless		"	"	"	"	"	"	"	"	"	30.0
Thermotanks		"	"	"	"	"	"	"	"	"	224.0
Thermotanks		"	"	"	"	"	"	"	"	"	147.0
Fans & Thermotanks		"	"	"	"	"	"	"	"	"	142.0
Fans & Thermotanks		"	"	"	"	"	"	"	"	"	205.0
Fans & Thermotanks		"	"	"	"	"	"	"	"	"	222.0
Fans & Thermotanks		"	"	"	"	"	"	"	"	"	322.5
Fans, Thermos, & Domestic Motors		"	"	"	"	"	"	"	"	"	207.5
Fans Thermotanks		"	"	"	"	"	"	"	"	"	165.0
Fans & Thermotanks		"	"	"	"	"	"	"	"	"	182.0
Fans		"	"	"	"	"	"	"	"	"	260.0
Fans		"	"	"	"	"	"	"	"	"	260.0
XXVI Fans		"	"	"	"	"	"	"	"	"	262.0
XXVII Fans		"	"	"	"	"	"	"	"	"	258.0
XXVIII Fans		"	"	"	"	"	"	"	"	"	
XXIX & XXX Spars		"	"	"	"	"	"	"	"	"	

in solid drawn steel tube when exposed to weather.



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