

# REPORT ON ELECTRIC LIGHTING INSTALLATION. No.

Port of Philadelphia Date of First Survey 16<sup>th</sup> July 1915 Date of Last Survey 1<sup>st</sup> Nov 1916 No. of Visits 61

No. in on the Iron or Steel S/S "PEARL SHELL" Port belonging to Wilmington Del.

Built at Wilmington Del. By whom Harlan & Hollingsworth When built 1916

Owners Shell Company of California Owners' Address San Francisco California U.S.

Card No. 439 Electric Light Installation fitted by Harlan & Hollingsworth When fitted 1916

### DESCRIPTION OF DYNAMO, ENGINE, ETC.

1- 12 1/2 K.W. Sturtevant make direct current generator coupled to steam engine  
1- 5 K.W. Do. Do. " " " " " "

Capacity of Dynamos 161 Amperes at 110 Volts, whether continuous or alternating current Continuous

Where is Dynamo fixed Engine Room Whether single or double wire system is used Double

Position of Main Switch Board Engine Room having switches to groups of 7 Circuits of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each Forecastle 6, Midship in pantry 24, Chart room 12, Galley 12, Engineers mess room 12, Second deck aft 12, Engine room 12

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 100 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 Not used

Are all switches and fuses constructed of incombustible materials and fitted on incombustible bases yes

Total number of lights provided for 228 arranged in the following groups :-

A Forecastle	12	lights each of	40	Watt	candle power requiring a total current of	4.4	Amperes
B Midship	48	lights each of	40	Do.	candle power requiring a total current of	17.5	Amperes
Chart Room	15		25	Do.		5.25	
C Galley	10	lights each of	25	Do.	candle power requiring a total current of	2.3	Amperes
Engineers mess	35		40	Do.		12.8	
D Second deck aft	30	lights each of	40	Do.	candle power requiring a total current of	10.90	Amperes
E Engine room	55	lights each of	40	Do.	candle power requiring a total current of	30	Amperes
2 Mast head lights	with 2 lamps each of		32		candle power requiring a total current of	2	Amperes
2 Side lights	with 2 lamps each of		32		candle power requiring a total current of	2	Amperes
4 Cargo lights	of		64		candle power, whether incandescent or arc lights	incandescent	

If arc lights, what protection is provided against fire, sparks, &c. Not used

Where are the switches controlling the masthead and side lights placed Wheel house

### DESCRIPTION OF CABLES.

Main cable carrying <u>45</u> } Amperes, comprised of <u>7</u> wires, each <u>10</u> S.W.G. diameter, <u>.090</u> square inches total sectional area
<u>4.4, 17.5, 5.25, 2.3, 10.9</u> and } Amperes, comprised of <u>19</u> wires, each <u>12</u> S.W.G. diameter, <u>.161</u> square inches total sectional area
Branch cables carrying <u>30.0</u> } Amperes, comprised of <u>7</u> wires, each <u>16</u> S.W.G. diameter, <u>.0225</u> square inches total sectional area
Branch cables carrying <u>2.3</u> Amperes, comprised of <u>1</u> wires, each <u>14</u> S.W.G. diameter, <u>.00503</u> square inches total sectional area
Leads to lamps carrying <u>1</u> Amperes, comprised of <u>1</u> wires, each <u>14</u> S.W.G. diameter, <u>.00503</u> square inches total sectional area
Cargo light cables carrying <u>2</u> Amperes, comprised of <u>26</u> wires, each <u>28</u> S.W.G. diameter, <u>.004472</u> square inches total sectional area

### DESCRIPTION OF INSULATION, PROTECTION, ETC.

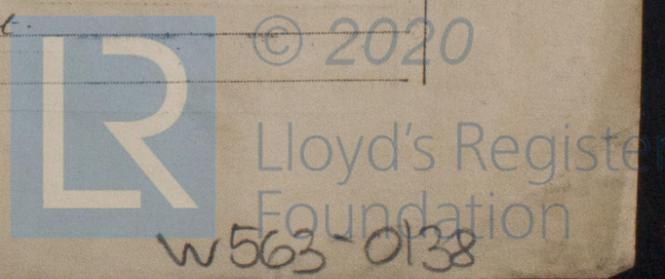
The wire used is Rubber covered, Lead encased, protected by iron armored conduit and hard rubber tubing

Joints in cables, how made, insulated, and protected no joints in feeder cables. Lamp circuits, where joints are made, are protected by two layers of rubber tape and two layers friction tape and painted with insulating compound.

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 Iron armored conduit



**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 Iron armored conduit

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Iron armored conduit

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

What special protection has been provided for the cables in engine room do do do

How are cables carried through beams Iron armored conduit through bulkheads, &c. do do do

How are cables carried through decks Lock nuts and made watertight

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 for stores

If so, how are they protected Iron armored conduit. Boxed in.

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 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 yes

Are any switches, fuses, or joints of cables fitted in the pump room or companion no

How are the lamps specially protected in places liable to the accumulation of vapour or gas none fitted

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.

HARLAN & HOLLINGSWORTH CORP'N.  
By [Signature]  
VICE PRESIDENT

Electrical Engineers

Date

**COMPASSES.**

Distance between dynamo or electric motors and standard compass 200 feet

Distance between dynamo or electric motors and steering compass 200 feet

The nearest cables to the compasses are as follows:—

A cable carrying	1	Amperes	8	feet from standard compass	8	feet from steering compass
A cable carrying	1	Amperes	12	feet from standard compass	12	feet from steering compass
A cable carrying	1/6	Amperes	2	feet from standard compass	2	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.

HARLAN & HOLLINGSWORTH CORP'N.  
By [Signature]  
VICE PRESIDENT

Builder's Signature.

Date

**GENERAL REMARKS.**

This electric lighting installation has been fitted in accordance with the Rules and found satisfactory. The lighting system has been tried at full power and found to work well.

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

J.W.D. 1/10/16

J. Bllelock, Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Elec. Light New York NOV 16 1916

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.



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