

## REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 66117

Port of Newcastle on Tyne Date of First Survey 4th May 1914 Date of Last Survey 15th May 1914 No. of Visits 7  
 No. in Reg. Book on the Iron or Steel S.S. "Arum" Port belonging to \_\_\_\_\_  
 Built at Walker By whom Swan Hunter & W.R. Ltd. When built 1914  
 Owners Flower Motor Ship Co. Ltd Owners' Address \_\_\_\_\_  
 Yard No. 916 Electric Light Installation fitted by Sunderland Forge & Eng. Co. Ltd. When fitted 1914

## DESCRIPTION OF DYNAMO, ENGINE, ETC.

One Multipolar compound wound dynamo, coupled direct to open type vertical engine  
 Capacity of Dynamo 90 Amperes at 100 Volts, whether continuous or alternating current Continuous ✓  
 Where is Dynamo fixed above Thrust block in E. Room. Whether single or double wire system is used Double ✓  
 Position of Main Switch Board Close to plant having switches to groups Four of lights, &c., as below  
 Positions of auxiliary switch boards and numbers of switches on each One in chartroom controlling 2 mast, 2 side, 2 compass, 1 telegraph.  
 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-oxidisable 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 No 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 153 arranged in the following groups:—  
 A 68 lights each of 16 candle power requiring a total current of 38.08 Amperes  
 B 40 lights each of 16 candle power requiring a total current of 22.40 Amperes  
 C 25 lights each of 16 candle power requiring a total current of 14.00 Amperes  
 D Projector & Arc lights each of 40 amp. & 15 amp. candle power requiring a total current of 55.00 Amperes  
 E lights each of candle power requiring a total current of \_\_\_\_\_ Amperes  
2 Mast head light with 1 lamps each of 32 D.F. candle power requiring a total current of 2.24 Amperes  
2 Side light with 1 lamps each of 32 D.F. candle power requiring a total current of 2.24 Amperes  
8 Cargo lights of 5 x 16 candle power, whether incandescent or arc lights Incandescent  
 If arc lights, what protection is provided against fire, sparks, &c. \_\_\_\_\_

Where are the switches controlling the masthead and side lights placed in Chartroom.

## DESCRIPTION OF CABLES.

Main cable carrying 74.48 Amperes, comprised of 19 wires, each 14 S.W.G. diameter, .094 square inches total sectional area  
 Branch cables carrying 55.00 Amperes, comprised of 19 wires, each 18 S.W.G. diameter, .054 square inches total sectional area  
 Branch cables carrying 38.08 Amperes, comprised of 7 wires, each 15 S.W.G. diameter, .028 square inches total sectional area  
 Leads to lamps carrying 2.24 Amperes, comprised of 1 wires, each 18 S.W.G. diameter, .0018 square inches total sectional area  
 Cargo light cables carrying 2.8 Amperes, comprised of 1 wires, each 16 S.W.G. diameter, .0032 square inches total sectional area

## DESCRIPTION OF INSULATION, PROTECTION, ETC.

In berths etc., Lead covered.  
In Engine room armoured and braided.  
Mains and masts V.I.R. in iron pipe.  
 Joints in cables, how made, insulated, and protected There are none.  
 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 or branches from the cable leading from dynamo to main switch board No.  
 How are the cables led through the ship, and how protected V.I.R. in iron pipe.



**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 V.I.R. in iron pipe.

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Armoured and braided.

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

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

How are cables carried through beams holes bushed fibre through bulkheads, &c. W.T. Glands.

How are cables carried through decks W.T. Iron deck tubes.

Are any cables run through coal bunkers Yes or cargo spaces Yes or spaces which may be used for carrying cargo, stores, or baggage Yes

If so, how are they protected V.I.R. in iron pipe.

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 No., fixed 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 800 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.

P. PRO THE SUNDERLAND FORGE & ENGINEERING CO., LTD.

Electrical Engineers

Date 20.5.14.

**COMPASSES.**

Distance between dynamo or electric motors and standard compass Directly about 196 ft.

Distance between dynamo or electric motors and steering compass " 192 ft.

The nearest cables to the compasses are as follows:—

A cable carrying <u>.56</u>	Ampères <u>led into</u>	feet from standard compass <u>about 5</u>	feet from steering compass
A cable carrying <u>.56</u>	Ampères <u>about 4</u>	feet from standard compass <u>led into</u>	feet from steering compass
A cable carrying <u>2.24</u>	Ampères <u>about 4</u>	feet from standard compass <u>about 5</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 nil degrees on each course in the case of the standard compass and nil degrees on each course in the case of the steering compass.

Builder's Signature: [Signature]

Date 5 June 1914

**GENERAL REMARKS.**

This electric light installation has been satisfactorily fitted on board and the vessel in my opinion is eligible in to have the record Electric Light noted in the Register Book

It is submitted that this vessel is eligible for THE RECORD. Elec. light. [Signature] Surveyor to Lloyd's Register of British and Foreign Shipping.

Committee's Minute

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.



Lloyd's Register Foundation