

## REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 3328

Port of *Middlesbrough* Date of First Survey *12<sup>th</sup> Feb.* Date of Last Survey *April 2<sup>nd</sup> 1902* No. of Visits *six*  
 No. in Reg. Book on the *Iron or Steel* *S.S. "Akabo"* Port belonging to *Liverpool*  
 Built at *Middlesbrough* By whom *Sir Raylton Wilson & Co* When built *1902-4*  
 Owners *Messrs The British African Shipping Co* Owners' Address *Liverpool*  
 Yard No. *482* Electric Light Installation fitted by *Messrs H. H. Allen Son & Co Ltd* When fitted *1902-4*

## DESCRIPTION OF DYNAMO, ENGINE, ETC.

*Open type double acting engine with single cylinder 10 1/2" x 4" stroke, fitted with throttle governor & coupled direct to an inverted horse shoe type compound wound dynamo*

Capacity of Dynamo *140* Amperes at *100* Volts, whether continuous or alternating current *Continuous*

Where is Dynamo fixed *Starboard side of engine room under bunker space*

Position of Main Switch Board *By dynamo against ship side* having switches to groups *A B C D E F G* of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each *for 1<sup>st</sup> class saloon so fixed close to saloon entrance door against the fair, having 12 switches & enclosed in a lock up case with glazed front.*

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 or 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 *100* 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 *equip of 260 16 c.p.* arranged in the following groups:—

<i>A Forecastle</i>	<i>14</i>	lights each of	<i>16</i>	candle power requiring a total current of	<i>8.4</i>	Amperes
<i>B 1<sup>st</sup> class saloon</i>	<i>32</i>	lights each of		candle power requiring a total current of	<i>19.2</i>	Amperes
<i>B C 2<sup>nd</sup> class saloon</i>	<i>50</i>	lights each of		candle power requiring a total current of	<i>32.0</i>	Amperes
<i>D Prop. Signal Engine</i>	<i>40</i>	lights each of		candle power requiring a total current of	<i>42.0</i>	Amperes
<i>E 2<sup>nd</sup> class saloon</i>	<i>32</i>	lights each of		candle power requiring a total current of	<i>19.2</i>	Amperes
<i>D F Engine space</i>	<i>30</i>	lights each of		candle power requiring a total current of	<i>15.0</i>	Amperes
<i>E G Cargo</i>	<i>32</i>	lights each of		candle power requiring a total current of	<i>19.2</i>	Amperes
<i>2 Mast head light with</i>	<i>1</i>	lamps each of	<i>32</i>	candle power requiring a total current of	<i>2.4</i>	Amperes
<i>2 Side light with</i>	<i>1</i>	lamps each of	<i>32</i>	candle power requiring a total current of	<i>2.4</i>	Amperes
<i>4 Cargo lights of (each)</i>			<i>128</i>	candle power, whether incandescent or arc lights	<i>incandescent</i>	

If arc lights, what protection is provided against fire, sparks, &c. *No arc lights used.*

Where are the switches controlling the masthead and side lights placed *In chart room.*

## DESCRIPTION OF CABLES.

Main cable carrying *156* Amperes, comprised of *34* wires, each *1/16* L.S.G. diameter, *.1534* square inches total sectional area  
 Branch cables carrying *30* Amperes, comprised of *4* wires, each *1/16* L.S.G. diameter, *.0291* square inches total sectional area  
 Branch cables carrying *19.2* Amperes, comprised of *4* wires, each *1/16* L.S.G. diameter, *.0229* square inches total sectional area  
 Leads to lamps carrying *6 x 2.4* Amperes, comprised of *1* wires, each *1/16* L.S.G. diameter, *.0082* square inches total sectional area  
 Cargo light cables carrying *4.8* Amperes, comprised of *34* wires, each *1/30* L.S.G. diameter, *.0045* square inches total sectional area

## DESCRIPTION OF INSULATION, PROTECTION, ETC.

*Rau india rubber, then vulcanising india rubber, india rubber coated tape, the whole vulcanised together, braided lined, glass and preservative compound.*

Joints in cables, how made, insulated, and protected *No joints in cables*

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 *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 Wood casing throughout keeping engine spaces and where piping is necessary*



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**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

*pipes and lead sheathing*

*Galvanized iron*

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

*Lead sheathing & armour*

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

*Lead sheathing & armour*

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

*Lead sheathing & armour*

How are cables carried through beams

*Through fibre ferrules*

*through bulkheads, &c.*

*Through fibre ferrules*

How are cables carried through decks

*Through iron pipes projecting not less than 18" luted with fibre*

Are any cables run through coal bunkers

*No*

or cargo spaces

*No*

or spaces which may be used for carrying cargo, stores, or baggage

*No*

If so, how are they protected

*✓*

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 cut outs for these lights fitted

*✓*

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

*✓*

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel

*By connection to frame of machine*

How are the returns from the lamps connected to the hull

*By copper plates on the fitting blocks, or by welding to a special brass earth*

Are all the joints with the hull in accessible positions

*Yes*

**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

*✓*

supplied with a voltmeter and

*✓*

an amperemeter, fixed

*✓*

The copper used is guaranteed to have a conductivity of *100* per cent. that of pure copper.

Insulation of cables is guaranteed to have a resistance of not less than *2500* 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.

*For W. H. ALLEN, SON & Co Ltd.*  
*J. W. Kempster*

Electrical Engineers

Date

**COMPASSES.**

Distance between dynamo or electric motors and standard compass

*105 Ft*

Distance between dynamo or electric motors and steering compass

*99 Ft*

The nearest cables to the compasses are as follows:— *All about Compass being double wire*

A cable carrying	Amperes	feet from standard compass	feet from steering compass
<i>8.4</i>	<i>19.5</i>	<i>19.5</i>	<i>19.5</i>
<i>4.8</i>	<i>19.5</i>	<i>19.5</i>	<i>19.5</i>
<i>4.8</i>	<i>19.5</i>	<i>19.5</i>	<i>19.5</i>

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

*0*

degrees on

course in the case of the

standard compass and

*0*

degrees on

course in the case of the steering compass.

Builder's Signature.

Date

**GENERAL REMARKS.**

*This installation has been examined while being fitted on board. The materials and workmanship are good. It has been examined while at work & found to be satisfactory*  
*B. D. Shilston*

Surveyor to Lloyd's Register of British and Foreign Shipping

Committee's Minute

*It is submitted that this installation appears to be satisfactory*

*17.4.02*

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.