

## REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 9147

Port of Middlesbrough Date of First Survey While Date of Last Survey Building No. of Visits ✓No. in 79 on the Iron or Steel Sp. "Avenwood" Port belonging to MiddlesbroughReg. Book 79 Built at Middlesbrough By whom Messrs. W. H. Harkess & Son When built 1915Owners R. A. Constantine & J. W. Donkin Owners' Address MiddlesbroughYard No. 210 Electric Light Installation fitted by Messrs. Campbell & Isherwood When fitted 1915

## DESCRIPTION OF DYNAMO, ENGINE, ETC.

Campbell & Isherwood, 1/2 pole, compound wound Dynamo, direct coupled to a Baby EngineCapacity of Dynamo 30 Amperes at 100 Volts, whether continuous or alternating current continuousWhere is Dynamo fixed Starboard Side Engine Room Whether single or double wire system is used singlePosition of Main Switch Board " " " having switches to groups 3 of lights, &c., as belowPositions of auxiliary switch boards and numbers of switches on each Chartroom & Engine room 4 & 2Switch in a convenient position to each light.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 yesIf 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-oxidizable metal yes and constructed to fuse at an excess of 45 per cent over the normal currentAre all fuses fitted in easily accessible positions yes Are the fuses of standard dimensions yes If wire fuses are usedare permanent instructions fitted on or near each switch board giving particulars of proper size of fuse for each circuit yesAre all switches and fuses constructed of incombustible materials and fitted on incombustible bases yesTotal number of lights provided for Deck 25 of 32 arranged in the following groups:—A Midships lights each of 21 of 16 c.p. 2 candle power requiring a total current of 11.5 AmperesB Navigation lights each of 5 of 16 5 of 32 candle power requiring a total current of 8.25 AmperesC Aft lights each of 14 of 16 candle power requiring a total current of 7.4 Amperes

D lights each of candle power requiring a total current of Amperes

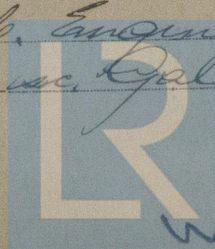
E lights each of candle power requiring a total current of Amperes

2 Mast head light with 1 lamps each of 32 candle power requiring a total current of included in A Amperes2 Side light with 1 lamps each of 32 candle power requiring a total current of included in A Amperes4 Cargo lights of 4 of 16 candle power, whether incandescent or arc lights incandescentIf arc lights, what protection is provided against fire, sparks, &c. —Where are the switches controlling the masthead and side lights placed Chartroom

## DESCRIPTION OF CABLES.

Main cable carrying 24.45 Amperes, comprised of 4 wires, each 18 S.W.G. diameter, .0125 square inches total sectional areaBranch cables carrying 11.5 Amperes, comprised of 3 wires, each 20 S.W.G. diameter, .003 square inches total sectional areaBranch cables carrying 8.25 Amperes, comprised of 3 wires, each 20 S.W.G. diameter, .003 square inches total sectional areaLeads to lamps carrying 1.65 Amperes, comprised of 1 wires, each 18 S.W.G. diameter, .0018 square inches total sectional areaCargo light cables carrying 2.2 Amperes, comprised of 110 wires, each 38 S.W.G. diameter, .004 square inches total sectional area

## DESCRIPTION OF INSULATION, PROTECTION, ETC.

Insulated with D.O.R. taped & protected in Accommodation by Lead covering, Engine Room & Boiler Room. Armoured & Braided, Holes & exposed places in use Gal. tubingJoints in cables, how made, insulated, and protected wire madeAre 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 NoHow are the cables led through the ship, and how protected Accommodation Lb. Engine room & Boiler Room, A & B. Holes & exposed places in use Gal. tubing



**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 N.I.R. in esc.

Cable iron pipe  
 What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Armoured & Braided

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

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

How are cables carried through beams White Ferrules through bulkheads, &c. Glands, W.T.

How are cables carried through decks Deck pipes & langed to Deck

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 in Gal. 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 —

Cargo light cables, whether portable or permanently fixed portable How fixed Special N.I. Boxes

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

How are the returns from the lamps connected to the hull 5/8 Tap screws with frame of machine

Are all the joints with the hull in accessible positions yes

Is the installation supplied with a voltmeter yes, and with an amperemeter yes, fixed on Mainboard

**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 1000 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.

CAMPBELL & BOWEN Ltd.

Per Thos. Macdonald

Electrical Engineers

Date 24th Jan 1916

**COMPASSES.**

Distance between dynamo or electric motors and standard compass about 45 ft.

Distance between dynamo or electric motors and steering compass about 45 ft.

The nearest cables to the compasses are as follows:—

A cable carrying	55	Amperes	1	feet from standard compass	1	feet from steering compass
A cable carrying	8.25	Amperes	10	feet from standard compass	6	feet from steering compass
A cable carrying		Amperes		feet from standard compass		feet from steering compass

Have the compasses been adjusted with and without the electric installation at work at full power yes

All wiring in vicinity of compasses is in the double system. The maximum deviation due to electric currents, etc., was found to be nil degrees on every course in the case of the

standard compass and nil degrees on every course in the case of the steering compass.

FOR W. HARKNESS & SON, LIMITED.

W. Harkness

Builder's Signature.

Date Feb 10/16

SECRETARY.

**GENERAL REMARKS.**

This Electric Light Installation has been fitted on board in accordance with the Rules and tried under full working conditions with satisfactory results.

It is submitted that this vessel is eligible for

THE RECORD. Elec. light.

J.W.D. 21/2/16

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

Committee's Minute



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