

TUE JUL 12 1921

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 74485.

Port of Newcastle on Tyne Date of First Survey 7/1/21 Date of Last Survey 17/6/21 No. of Visits 8.
 No. in on the Steel S.S. MIDDLESEX. Port belonging to
 Reg. Book 66042 Built at Newcastle on Tyne By whom Swan Hunter & Wigham Richardson When built 1921
 Owners Federal Steam Navigation Co Owners' Address 2 Finchurch Avenue London E.C.3
 Yard No. 1026 Electric Light Installation fitted by Swan Hunter & Wigham Richardson When fitted 1921

DESCRIPTION OF DYNAMO, ENGINE, ETC.

2 Compound multipolar dynamo (Vroux-Curtis type) coupled direct to Robey steam engine, enclosed type cylinders 9" x 7".

Capacity of Dynamo 227 Amperes at 110 Volts, whether continuous or alternating current continuous

Where is Dynamo fixed engine room after end. Whether single or double wire system is used double.

Position of Main Switch Board engine room after bulkhead having switches to groups seven of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each none

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 yes

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

Total number of lights provided for 328 arranged in the following groups:—

A Midship Acc. 72 lights each of 56-20 watt, 6-16 cp, 9-16 cp 32 candle power requiring a total current of 18.62 Amperes

B Engine Acc. 72 lights each of 68-20 watt, 4-16 candle power requiring a total current of 15.84 Amperes

C Crew qts 52 lights each of 48-20 watt, 4-16 candle power requiring a total current of 12.0 Amperes

D Cargo lights 75 lights each of 70-16 cp, 5-2000 cp 11-16 cp requiring a total current of 76.3 Amperes

E Engine & Boiler Room. 53 lights each of 32-20 watt, 5-2000 cp 11-16 cp requiring a total current of 17.56 Amperes

F Wireless 2 Mast head light with 1 lamps each of 32 candle power requiring a total current of 2.4 Amperes

2 Side light with 1 lamps each of 32 candle power requiring a total current of 2.4 Amperes

19 Cargo lights of 14 of 5-16 cp, 5-2000 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 on bridge

DESCRIPTION OF CABLES.

Main cable carrying 227 Amperes, comprised of 37 wires, each .093 S.W.G. diameter, .250 square inches total sectional area

Branch cables carrying 18.62 Amperes, comprised of 7 wires, each .044 S.W.G. diameter, .01 square inches total sectional area

Branch cables carrying 15.84 Amperes, comprised of 7 wires, each .044 S.W.G. diameter, .01 square inches total sectional area

Leads to lamps carrying 76.3 Amperes, comprised of 19 wires, each .044 S.W.G. diameter, .06 square inches total sectional area

Cargo light cables carrying 23 Amperes, comprised of 70 wires, each .0076 S.W.G. diameter, .003 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Cables in engine room, stokehold and shelter deck are lead covered, braided and armoured. Cables in accommodation are lead covered.

Joints in cables, how made, insulated, and protected none made.

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 main run through shelter deck, secured to same by strong iron clips.



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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 *lead covered and painted*

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat *no*

What special protection has been provided for the cables near boiler casings *no*

What special protection has been provided for the cables in engine room *no*

How are cables carried through beams *lead bushed holes* through bulkheads, &c. *bulkhead glands*

How are cables carried through decks *deck pipes*

Are any cables run through coal bunkers *no* or cargo spaces *yes* or spaces which may be used for carrying cargo, stores, or baggage *yes*

If so, how are they protected *lead covered and painted*

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 *flexible from watertight socket* How fixed *clipped to bulkhead*

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

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 *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.

SWAN, HUNTER, & WILKINSON RICHARDSON, LTD.

Electrical Engineers

Date *29th June 1921*

COMPASSES.

Distance between dynamo or electric motors and standard compass *100 feet.*

Distance between dynamo or electric motors and steering compass *100 feet.*

The nearest cables to the compasses are as follows:—

A cable carrying	Ampères	feet from standard compass	feet from steering compass
<i>9.9</i>	<i>10</i>	<i>8</i>	<i>8</i>
<i>.56</i>	<i>on the</i>	<i>5</i>	<i>5</i>
<i>.56</i>	<i>on the</i>	<i>on the</i>	<i>on the</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 *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. Date *4 July 1921.*

GENERAL REMARKS.

The above installation is in accordance with the Society's Rules. The vessel is eligible in my opinion for notation elec light and wireless.

See 127. 10.0. 6 elec light bell 15/7/21

Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 19 JUL. 1921



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