

21 DEC. 1921

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 41562

Part of Glasgow Date of First Survey 27. 10. 21 Date of Last Survey 26. 11. 21 No. of Visits 6
 No. in Reg. Book 23124 on the Iron or Steel S. S. MADURA Port belonging to Glasgow
 Built at Scotstoun By whom Messrs Barclay Curle & Co When built 1921
 Owners The Brit. St. Nav. Co Ltd. Owners' Address _____
 Yard No. 585 Electric Light Installation fitted by Messrs J. A. Kinnaird & Co When fitted 1921

TOTAL K.W. = 176

DESCRIPTION OF DYNAMO, ENGINE, ETC.

2 Sets Shanks Compound Vertical 2 crank steam engines cylinders 12 1/2 x 19 x 8 Speed 400 R.P.M. Direct Coupled to Newton Bros (Derby) Ltd 80KW. 100V. Compound Wound Dynamos. + one Emergency 16KW.

Capacity of Dynamo 800 Amperes at 100 Volts, whether continuous or alternating current Continuous

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

Position of Main Switch Board in Engine Room having switches to groups A-J. of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each 3 Aux. Boards fixed in port alleyway upper deck each having 3 switches.

If fuses are fitted on main switch board to the cables of main circuit Yes and on each auxiliary ^{FUSE} 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 732. arranged in the following groups:—

A	236	lights each of 16c	84 Fans.	candle power requiring a total current of	107	Amperes
B	163	lights each of 16c	54 "	"	74.34	"
CB	116	lights each of 16c	4 "	candle power requiring a total current of	89.62	Amperes
D	89	lights each of 16c	"	"	120	"
DE	188	lights each of 16c	18 Fans.	candle power requiring a total current of	151	Amperes
E	14	Heaters.	"	"	245	"
FD	21	Heaters.	"	candle power requiring a total current of	190	Amperes
F	24	Heaters.	"	"	208	"
G	2	Turning Motors	"	candle power requiring a total current of	99.6	Amperes
H	1	Vent. Fan.	"	"	29.	"
I	2	Mast head lights with 1 lamp each of	32.	candle power requiring a total current of	2.24	Amperes
J	2	Side lights with 1 lamp each of	32.	candle power requiring a total current of	2.24	Amperes
K	40	Cargo lights of	16	candle power, whether incandescent or arc lights	incandescent	
L	4		2000			

If arc lights, what protection is provided against fire, sparks, &c.

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

DESCRIPTION OF CABLES.

Main cable carrying 800 Amperes, comprised of 11 9/16 wires, each .103 S.W.G. diameter, .7500 square inches total sectional area
 Branch cables carrying 145 Amperes, comprised of 37 wires, each .093 S.W.G. diameter, .2500 square inches total sectional area
 Branch cables carrying 67 Amperes, comprised of 19 wires, each .064 S.W.G. diameter, .0600 square inches total sectional area
 Leads to lamps carrying .2 Amperes, comprised of 3 wires, each .029 S.W.G. diameter, .0020 square inches total sectional area
 Cargo light cables carrying 4.48 Amperes, comprised of 3 wires, each .029 S.W.G. diameter, .0020 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Conductors of high conductivity tinned copper, wire insulated with pure and vulcanised india rubber, the whole vulcanised together, taped braided and lead covered, also taped braided lead covered & armoured & braided overall.

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 Lead covered or lead covered and armoured and braided clipped direct to decks or bulkheads.

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 Cables lead covered, armoured and braided overall

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Lead covered armoured & braided

What special protection has been provided for the cables near boiler casings Lead covered armoured & braided.

What special protection has been provided for the cables in engine room Lead covered armoured & braided.

How are cables carried through beams Crushed holes through bulkheads, &c. W.T. Bulkhead glands

How are cables carried through decks W.T. steel 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 Lead covered armoured & braided clipped to deck head.

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage yes.

If so, how are the lamp fittings and cable terminals specially protected C.I. con. box.

Where are the main switches and fuses for these lights fitted in compartment

If in the spaces, how are they specially protected C.I. box.

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 Main S.S. board.

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 2500 Ω Mains 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.

J. A. KINNAIRD & COMPANY LIMITED

Electrical Engineers

Date 9th Dec. 1921.

COMPASSES.

Distance between dynamo or electric motors and standard compass Approx 155' Direct line

Distance between dynamo or electric motors and steering compass 150' " "

The nearest cables to the compasses are as follows:—

A cable carrying	Amperes	at feet from standard compass	at feet from steering compass
<u>.2</u>		<u>at</u>	<u>at</u>
A cable carrying	<u>9</u>	<u>20</u> feet from standard compass	<u>15</u> feet from steering compass
A cable carrying		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

The maximum deviation due to electric currents, etc., was found to be nil degrees on any course in the case of the standard compass and nil degrees on any course in the case of the steering compass.

J. J. Creevy

Builder's Signature.

Date 12th Dec 1921

GENERAL REMARKS.

This installation has been fitted on board under special survey. Tested under full working conditions and found satisfactory.

FRS - £36-6-0

of 5/12/21.

THE RECORD

L.L. 23/12/21.

J. P. Rankin

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

GLASGOW

20 DEC 1921

Elec. Light.



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THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

17.12.21

2m.11.10.—Transfer.