Rpt. 13.

Upl Rpt No 15955.

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 15955.

Received at London Office FEB 22 1922

Port of Hartlepool Date of First Survey 4-11-21 Date of Last Survey 9-2-22 No. of Visits 8

No. in Reg. Book on the Iron or Steel S.S "CYNTHIANA" Port belonging to Liverpool

Built at Hartlepool By whom Irvine's Shipbuilding Co. When built 1922

Owners Furness Withy & Co. Ltd Owners' Address Royal Liver Buildings Liverpool

Yard No. 587 Electric Light Installation fitted by Campbell & Isherwood Ltd. When fitted 1922

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Two Campbell & Isherwood 4 Pole Compound Wound Dynamos. 100 Volts 20 K.W & 100 Volts 7½ K.W. driven by "Howden" enclosed Engines.

Capacity of Dynamo one 200 (one 75) Amperes at 100 Volts, whether continuous or alternating current Continuous

Where is Dynamo fixed In recess of Engine Room. Whether single or double wire system is used Double

Position of Main Switch Board Alongside Dynamos having switches to groups A.B.C.D & E & F. of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each A. CHART ROOM (8), SALOON PANTRY (10), ENGINEERS ALLEYWAY (6), AFT (6), B. ENGINE ROOM (2), FOR^D MAST HOUSE (4), MAIN MAST HOUSE (4), C. ENGINE ROOM (8), BOILER ROOM (6),

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 50% 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 265 arranged in the following groups :—

A ACCOMMODATION AND NAVIGATION.	125	lights ~~each~~ of	8. 16. & 32	candle power requiring a total current of	45 Amperes
B CARGO	12	lights each of	300	candle power requiring a total current of	36 Amperes
C MACHINERY SPACES	90	lights each of	16	candle power requiring a total current of	54 Amperes
D ASH HOIST. N^o 1	~~lights each of~~		—	candle power requiring a total current of	40 Amperes
E ASH HOIST N^o 2.	~~lights each~~ of		—	candle power requiring a total current of	40. Amperes
F. WIRELESS 2	Mast head lights with	1	lamps each of 32	candle power requiring a total current of	15 Amperes
2	Side lights with	1	lamps each of 32	candle power requiring a total current of	2 Amperes
12	Cargo lights of		600	candle power requiring a total current of	2 Amperes

If arc lights, what protection is provided against fire, sparks, &c. Incandescent None Fitted

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

DESCRIPTION OF CABLES.

Main cable carrying	200 (75)	Amperes, comprised of	37 (19)	wires, each	13 (15)	S.W.G. diameter, ·2341 (·0765) square inches total sectional area
Branch cables carrying	45	Amperes, comprised of	7	wires, each	16	S.W.G. diameter, ·02227 square inches total sectional area
Branch cables carrying	40	Amperes, comprised of	7	wires, each	16	S.W.G. diameter, ·02227 square inches total sectional area
Leads to lamps carrying	3	Amperes, comprised of	3	wires, each	20	S.W.G. diameter, ·003 square inches total sectional area
Cargo light cables carrying	1·5	Amperes, comprised of	12	wires, each	30	S.W.G. diameter, ·0015 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Pure Vulcanised Rubber & Rubber tape the whole Vulcanised together & Lead Sheathed Wire Armoured & Braided.

Joints in cables, how made, insulated, and protected None except Mechanical

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 Sheathed. Armoured & Braided clipped to under side of decks or on bulkheads. Lead Sheathed Cables in Saloon & Cabins

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 Enclosed in Galvanized Iron Pipe

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Lead Sheathed, Armoured & 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 Through holes bushed with lead (when not armoured) *through bulkheads, &c.* W.T. Glands.

How are cables carried through decks Through Galvanized Iron or Brass 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 Sheathed, Armoured & Braided

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* Yes. (2), *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 2500 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 & Isherwood Ltd. per P. O'Driscoll Electrical Engineers *Date* 16th Feb. 1922

COMPASSES.

Distance between dynamo or electric motors and standard compass About 150 feet.

Distance between dynamo or electric motors and steering compass Do.

The nearest cables to the compasses are as follows:—

A cable carrying	9	*Amperes*	10	*feet from standard compass*	10	*feet from steering compass*
A cable carrying	20	*Amperes*	50	*feet from standard compass*	50	*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.

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

FOR IRVINE'S SHIP BUILDING & DRY DOCKS CO., LIMITED
H. Mitchell
Managing Director

Builder's Signature. *Date* 20th February 1922

GENERAL REMARKS.

This installation has been fitted under Special Survey. The materials and workmanship are good. On completion it was satisfactorily tried under working conditions

It is intended that this vessel is classed in THE RECORD.

Elec. Light. L.J.
Fee £1:10:0. Applied for:- 18.2.22. 22/2/22.
Paid:- 21/4/22 Shh

R.D. Shilston.
Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 24 FEB. 1922
Elec Lt

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

2a.11.20.—Brasier.