

## REPORT ON ELECTRIC LIGHTING INSTALLATION.

No. 27847

Port of SUNDERLAND Date of First Survey 24 Mar Date of Last Survey 26 Mar '19 No. of Visits 3  
 No. in Reg. Book on the Iron or Steel S.S. "CAIRN GOWAN" Port belonging to Newcastle  
 Built at SUNDERLAND By whom THE SUNDERLAND S.B. CO. LTD When built 1919  
 Owners Cairn Line Ltd Owners' Address Newcastle  
 Fard No. 320 Electric Light Installation fitted by The Sunderland Forge & Eng Co. LTD When fitted 1919

## DESCRIPTION OF DYNAMO, ENGINE, ETC.

One Combined Plant consisting of single cylinder, vertical, open type Engine 7x5. 360 pers. 100 lbs. steam. coupled to Compound wound multipolar Dynamo. Both by S.F. & E.C.

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

Where is Dynamo fixed Eng. Rm. - Bolted to Plaft. - Starboard side Whether single or double wire system is used double

Position of Main Switch Board close to Dynamo having switches to groups five of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each on Bridge with nine switches controlling:- Navigation lights, Morse light, Compasses & Telegraph.

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 No 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 149 @ 16c arranged in the following groups:-

A ACCOMM <sup>DN</sup> = 66	lights each of	16	candle power requiring a total current of	37.0	Amperes
B CARGO = 30	lights each of	"	candle power requiring a total current of	16.8	Amperes
C NAVIGATION = 25	lights each of	"	candle power requiring a total current of	14.0	Amperes
D ENG. & BUNKER <sup>DN</sup> = 28	lights each of	"	candle power requiring a total current of	15.7	Amperes
E WIRELESS = -	lights each of	-	candle power requiring a total current of	25	Amperes
2 Mast head light with	1 lamps each of	32	candle power requiring a total current of	2.24	Amperes
2 Side light with	1 lamps each of	32	candle power requiring a total current of	2.24	Amperes
5 Cargo lights of	SIX - 16		candle power, whether incandescent or arc lights	incandescent	

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

Where are the switches controlling the masthead and side lights placed on Bridge

## DESCRIPTION OF CABLES.

Main cable carrying	100	Amperes, comprised of	19	wires, each	14	S.W.G. diameter,	.094	square inches total sectional area
Branch cables carrying	37.0	Amperes, comprised of	7	wires, each	16	S.W.G. diameter,	.022	square inches total sectional area
Branch cables carrying	14.0	Amperes, comprised of	7	wires, each	20	S.W.G. diameter,	.007	square inches total sectional area
Leads to lamps carrying	2.5	Amperes, comprised of	1	wires, each	18	S.W.G. diameter,	.0018	square inches total sectional area
Cargo light cables carrying	3.5	Amperes, comprised of	70	wires, each	36	S.W.G. diameter,	.0032	square inches total sectional area

## DESCRIPTION OF INSULATION, PROTECTION, ETC.

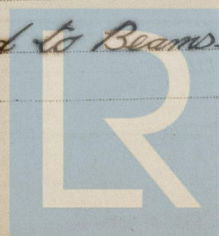
MAINS & MACH<sup>1</sup> SPACES etc. - Pure & Vulc. I.R. - taped & vulcanized - then Armoured Braided  
ACCOMM<sup>DN</sup> SPACES ditto. Lead Covered

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

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 A.E.B. Cable clipped to Beams



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Foundation



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 *V.V.R. Cable run in pipe or Armoured & Braided Cable used.*

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 *do.*

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

How are cables carried through beams *Holes bushed with fibre* through bulkheads, &c. *W.T. Glands.*

How are cables carried through decks *W.T. 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 *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*, fixed *on Main Switch.*

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.

P. PRO THE SUNDERLAND SHIP BUILDING CO. LD.

Electrical Engineers

Date *24<sup>th</sup> APRIL 1919*

COMPASSES.

Distance between dynamo or electric motors and standard compass *Directly 94 FT.*

Distance between dynamo or electric motors and steering compass *102 FT.*

The nearest cables to the compasses are as follows:—

A cable carrying	<i>14.0</i>	Amperes	<i>7</i>	feet from standard compass	<i>11</i>	feet from steering compass
A cable carrying	<i>.56</i>	Amperes	<i>led into</i>	feet from standard compass	<i>12</i>	feet from steering compass
A cable carrying	<i>.56</i>	Amperes	<i>12</i>	feet from standard compass	<i>led into</i>	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 *0* degrees on *any* course in the case of the standard compass and *0* degrees on *any* course in the case of the steering compass.

FOR THE SUNDERLAND SHIP BUILDING CO. LD.

Builder's Signature.

Date

*May 3<sup>rd</sup> 1919*

GENERAL REMARKS.

The installation has been *satisfactorily* fitted in the vessel, tested at full load and found good.

It is submitted that this vessel is eligible for THE RECORD. Elec. light.

*AWD 17/5/19.*

*Sh. Davis.*

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.