Rpt. 13.

Received at London Office FRI. AUG. 7. 1914

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 26181

Port of Sunderland. Date of First Survey 10 July Date of Last Survey 27 Jul '14 No. of Visits 4

No. in Reg. Book ____ on the ~~Iron or~~ Steel S.S. "Benrinnes" Port belonging to Leith

Built at Sunderland By whom Bartram & Sons Ld When built 1914

Owners W. Thomson & Coy Owners' Address Leith

Yard No. 233 Electric Light Installation fitted by Sunderland Forge & Eng Co Ld When fitted 1914

DESCRIPTION OF DYNAMO, ENGINE, ETC.

One compound wound multipolar dynamo coupled direct to open type vertical engine both Sunderland Forge & Eng. Co.Ltd.

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

Where is Dynamo fixed Bottom platform Whether single or double wire system is used double

Position of Main Switch Board bottom platform having switches to groups four of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each In chart room having switches for 2 masthead 2 sidelights and 2 compasses.

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 ____

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 141 arranged in the following groups :—

A	Ship 62	lights each of	16	candle power requiring a total current of	37.2	Amperes
B	For.cargo 25	lights each of	16	candle power requiring a total current of	15	Amperes
C	Aft. cargo 20	lights each of	16	candle power requiring a total current of	12	Amperes
D	Eng. Room 22	lights each of	16	candle power requiring a total current of	13	Amperes
E	✓	lights each of	✓	candle power requiring a total current of	✓	Amperes
2	Mast head light with	2	lamps each of	32 c.p.	candle power requiring a total current of	2.4	Amperes
2	Side light with	2	lamps each of	32 c.p.	candle power requiring a total current of	2.4	Amperes
9	Cargo lights of	5 x 16	candle power, whether incandescent or arc lights	incandescent			

If arc lights, what protection is provided against fire, sparks, &c. there are none

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

DESCRIPTION OF CABLES.

Main cable carrying	77.2	Amperes, comprised of	19	wires, each	14	S.W.G. diameter,	.094	square inches total sectional area
Branch cables carrying	37.2	Amperes, comprised of	7	wires, each	17	S.W.G. diameter,	.017	square inches total sectional area
Branch cables carrying	15	Amperes, comprised of	7	wires, each	18	S.W.G. diameter,	.0125	square inches total sectional area
Leads to lamps carrying	2.4	Amperes, comprised of	1	wires, each	18	S.W.G. diameter,	.0018	square inches total sectional area
Cargo light cables carrying	3	Amperes, comprised of	1	wires, each	16	S.W.G. diameter,	.0032	square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

In berths L.Covered
In engine room Armoured and braided
Mains and mast V.I.R. in pipe

Joints in cables, how made, insulated, and protected There are 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 There are none

How are the cables led through the ship, and how protected V.I.R. in iron pipe.

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 braiding over steel armouring and lead covering

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat braid over steel armouring

What special protection has been provided for the cables near boiler casings do. do.

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

How are cables carried through beams Fibre bushed holes *through bulkheads, &c.* W.T. Glands

How are cables carried through decks Iron deck tubes flanged on deck.

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 V.I.R. in 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 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 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 _____ megohms per statute mile at 60° Farhenheit 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 FORGE & ENGINEERING Co., Ltd.,

Wyn Mars Director

Electrical Engineers *Date* 29/7/1914.

COMPASSES.

Distance between dynamo or electric motors and standard compass about 100 feet

Distance between dynamo or electric motors and steering compass about 96 feet

The nearest cables to the compasses are as follows :—

A cable carrying .6	*Amperes* about 8	*feet from standard compass* led into	*feet from steering compass*
A cable carrying 16	*Amperes* led into	*feet from standard compass* 8 feet	*feet from steering compass*
A cable carrying 6	*Amperes* 6	*feet from standard compass* 10	*feet from steering compass*

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

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.*

BARTRAM & SONS LTD.

per R.d Bartram *Builder's Signature.* *Date* August 1st 1914

GENERAL REMARKS.

This installation is well fitted & was found satisfactory on trial under full loads.

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

F.P. 7.8.14

William G. Butler. Jun.

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

Committee's Minute

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

1m.9.12.—Transfer.