

Switch Board After end of engine room having switches to groups 30
 Whether single or double wire system is used Single-wire.
 Positions of auxiliary switch boards and numbers of switches on each One in wheelhouse as per attached sheet. of lights, &c. as below
 Bridge, 10 switches for

T.S.S. "MAHANA".

9 JUL 1917

LIST OF ELECTRIC LIGHTING AND POWER CIRCUITS.

No.	Description	Quantity	Power (Candle)	Current (Amperes)
1	Lights of 16 candle power requiring a total current of 24.0 amperes.	40	16	24.0
2	" " " "	24	16	14.4
3	" " " "	59	16	35.4
4	" " " "	30	16	18.0
5	" " " "	40	16	24.0
6	" " " "	56	16	33.6
7	" " " "	40	16	24.0
8	" " " "	11	16	6.6
9	" " " "	18	16	10.8
10	" " " "	14	16	8.4
11	" " " "	46	16	27.6
12	" " " "	46	16	27.6
13	" " " "	51	16	30.6
14	" " " "	48	16	28.8
15	" " " "	21	16	12.6
16	" " " "	1	16	10.0
17	" " " "	1	2000	10.0
18	" " " "	1	2000	10.0
19	" " " "	1	2000	10.0
20	" " " "	1	2000	30.0
21	" " " "	1	2000	20.0
22	Fan Motor			20.0
23	" "			20.0
24	" "			20.0
25	" "			15.0
26	" "			24.0
27	Turbine Turning Motor.			15.0
28	Potato Peeling m/c Motor (Mains fitted only)			15.0
29	Lathe Motor.			30.0
30	Marconi Installation.			

DESCRIPTION OF INSULATION, PROTECTION, ETC.
 Cables composed of tinned copper, conductors, insulated with pure and vulcanised indiarubber
 taped and the whole vulcanised together, and braided and compounded overall.
 Joints in cables, how made, insulated, and protected No joints



REPORT ON ELECTRIC LIGHTING INSTALLATION.

Received at London Office SAT. 14 JUL. 1917

Port of Belfast No. 4826

No. in Reg. Book 140 on the Iron or Steel P.S. Mahana Date of First Survey _____ Date of Last Survey _____ No. of Visits _____

Built at Belfast Port belonging to Southampton
Owners Shaw Savill & Albion Co. Ltd. By whom Workman Clark & Co. Ltd. built 1917
Yard No. 349 Electric Light Installation fitted by Liverpool Forge Coy. Ltd. when fitted 1917
Contractors' Address London

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Two compound wound multipolar direct current generators direct coupled to compound vertical steam engines running at a speed of 300 R.P.M. on a steam pressure of 100 lbs. per sq. in.
Capacity of Dynamo each 350 Amperes at 100 Volts, whether continuous or alternating current Continuous

Where is Dynamo fixed After end of engine room Whether single or double wire system is used Single-wire

Position of Main Switch Board After end of engine room having switches to groups 30 of lights, &c. as below

Positions of auxiliary switch boards and numbers of switches on each One in wheelhouse on Bridge, 10 switches for navigating lights.

If cut outs 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 cut outs fitted to both flow and return wires or cables of all circuits including lamp circuits ---

Are the cut outs of non-oxidizable metal Yes and constructed to fuse at an excess of 100 per cent over the normal current

Are all cut outs 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 cut-outs constructed of incombustible materials and fitted on incombustible bases Yes

Total number of lights provided for 544 arranged in the following groups:— (See attached list)

Group	Description	Lights	Amperes	Candle Power
A	lights each of			candle power requiring a total current of
B	lights each of			candle power requiring a total current of
C	lights each of			candle power requiring a total current of
D	lights each of			candle power requiring a total current of
E	lights each of			candle power requiring a total current of
	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
	136 Cargo lights of	16		candle power, whether incandescent or arc lights <u>Incandescent</u>
	Also 5	2000		

If arc lights, what protection is provided against fire, sparks, &c. No arc lamps fitted.

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

DESCRIPTION OF CABLES.

Main cable carrying	350 Amperes, comprised of	61 wires, each	0.108" L.S.G. diameter,	0.550 square inches total sectional area
Branch cables carrying	35 Amperes, comprised of	19 wires, each	18 L.S.G. diameter,	0.03375 square inches total sectional area
Branch cables carrying	10 Amperes, comprised of	7 wires, each	18 L.S.G. diameter,	0.01247 square inches total sectional area
Leads to lamps carrying	2.4 Amperes, comprised of	3 wires, each	20 L.S.G. diameter,	0.00299 square inches total sectional area
Cargo light cables carrying	10 Amperes, comprised of	114 wires, each	38 L.S.G. diameter,	0.00319 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Cables composed of ginned copper, conductors, insulated with pure and vulcanised indiarubber taped and the whole vulcanised together, and braided and compounded overall.

Joints in cables, how made, insulated, and protected No joints.

Are all the joints of cables thoroughly soldered, resin only having been used as a flux --- 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 V.I.R. cables run in strong wood casing through 'tween decks.

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 Run in screwed galvanised iron tube made watertight.

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 and Braided.

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

How are cables carried through beams through holes bushed with fibre through bulkheads, &c. In brass w.t. glands. ✓

How are cables carried through decks through watertight 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 In bunkers - Screwed w.t. galvanised iron pipe. In 'Tween decks - In strong wood casing.

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 By thick glass shade & strong brass guard over

Where are the main switches and cut outs for these lights fitted In engine room.

If in the spaces, how are they specially protected -----

Are any switches or cut outs fitted in bunkers No.

Cargo light cables, whether portable or permanently fixed Portable How fixed Connected to heavy watertight brass plugs and sockets.

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel Sweated to heavy brass lugs & securely bolted to hull. ✓

How are the returns from the lamps connected to the hull Sweated to brass washers securely screwed to hull. ✓

Are all the joints with the hull in accessible positions Yes

The installation is supplied with 2 voltmeters and 2 amperemeters fixed in engine room

VESSELS BUILT FOR CARRYING PETROLEUM.

In vessels built for carrying petroleum, are all switches and cut-outs fitted in positions not liable to the accumulation of petroleum vapour or gas

Are any switches, cut outs, 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 100 per cent. that of pure copper.

Insulation of cables is guaranteed to have a resistance of not less than 2500 megohms per statute mile after 24 hours' immersion in seawater.

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.

H. Wright DIRECTOR

Electrical Engineers

Date 9 JUL 1917

COMPASSES.

Distance between dynamo or electric motors and standard compass 200 FT

Distance between dynamo or electric motors and steering compass 192 FT

The nearest cables to the compasses are as follows:—

A cable carrying 14.4 Amperes 8 feet from standard compass 8 feet from steering compass

A cable carrying 0.6 Amperes 3 feet from standard compass 3 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 Nil degrees on all courses in the case of the

standard compass and Nil degrees on all courses in the case of the steering compass.

PRO WORKMAN, CLARK & CO., LIMITED.

H. Shackleton

Builder's Signature.

Date 11th July 1917

GENERAL REMARKS.

This installation is of good description and has been fitted in accordance with the Rules

it is stated that this vessel is eligible for THE RECORD. Elec light. HWD. 14/7/17

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

Committee's Minute

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

REPORT FORM No. 19-3m34.



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