

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 995.

Port of Cadix Date of First Survey 22-12-21 / Date of Last Survey 31-1-23 No. of Visits 16
 No. in on the Iron or Steel Twin S.S. "MANUEL ARNUS" Port belonging to Barcelona
 Reg. Book 665-82 Built at Cadix By whom Sociedad Española Construcción ^{naval} When built 1923
 Owners Cia. Suroatlantica Owners' Address Cadix
 Yard No. 47 Electric Light Installation fitted by S. E. de C. N. Cadix When fitted 1923

DESCRIPTION OF DYNAMO, ENGINE, ETC.

3 "CASTLE" Dynamos fitted, Makino J. Holmes & Co. Newcastle. Compound wound, direct driven by a high speed steam engine, vertical & of enclosed type.
 Capacity of Dynamo 364 Amperes at 110 Volts, whether continuous or alternating current continuous
 Where is Dynamo fixed Engine Room Whether single or double wire system is used Double
 Position of Main Switch Board Engine Room having switches to groups B to U of lights, &c., as below
 Positions of auxiliary switch boards and numbers of switches on each 1st Class, Pantry, Hall, Dining Room, Corridor, 2nd Class Corridor & Hospital, 3rd Class Entrance to accommodation, Steward's Room, Emergency Lighting House, Marconi, Eng. Mess Room, Inf. Corridor, Switches to all circuits & switches to each lamp.
 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 75% 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 1264 arranged in the following groups :-

Group	Number of Lights	Wattage	Candle Power	Current (Amperes)
A B C D	305	164.36	16.25, 32.50, 100, 200	68.0
B E F G H	372	240.85	15, 23, 17, 43, 10	166.8
C I J K L	196	174.13	7, 2, 23, 10	251.2
D M N O P	121	96.14	11	50.8
E Q R S T U	250	142.39	9, 26, 10	77.0
2 Mast head light with 2 lamps each of 32 cp				1/2
2 Side light with 2 lamps each of 32 cp				1/2
30 Cargo lights of 100				

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

Where are the switches controlling the masthead and side lights placed Wheel House on Bridge aft to Chart Room.

DESCRIPTION OF CABLES.

Carrying Capacity	Wires	Diameter	Sectional Area
Main cable carrying 316 Amperes, comprised of 110	61	12 S.W.G.	.578 square inches
Branch cables carrying 102 Amperes, comprised of 47	19	14	.0955
Branch cables carrying 40 Amperes, comprised of 20	14	13 S.W.G.	.0924
Leads to lamps carrying 1 Amperes, comprised of 1	7	14	.0350
Cargo light cables carrying 3 Amperes, comprised of 1	7	16 S.W.G.	.0225
	1	20	.0070
	1	17 S.W.G.	.0024
	1	18	.0018
	1	17 S.W.G.	.0024

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Main cable. Lead covered, armoured and braided.
 Branch cables. Lead covered, armoured & braided. Armoured & braided.
 Leads to lamps. T.A.B. Lead covered. Vulcanized rubber insulated.
 Joints in cables, how made, insulated, and protected Joint boxes.

Are all the joints of cables thoroughly soldered, and the flux used not containing acids or other corrosive substances Yes 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 Yes

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 Cables led in grooved wood casing direct through corridors.



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 *armoured cable and watertight fittings*

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat *Armoured cable*

What special protection has been provided for the cables near boiler casings *Armoured cable*

What special protection has been provided for the cables in engine room *Armoured cable*

How are cables carried through beams *Lead bushes* through bulkheads, &c. *Watertight glands*

How are cables carried through decks *Deck tubes*

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 *Armoured cable*

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 *Watertight fittings*

Where are the main switches and fuses for these lights fitted *On Deck*

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 from ply* How fixed *Watertight metal box*

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 *Engin Room*

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.

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DIRECTOR

Electrical Engineers Date *27th April 1923*

COMPASSES.

Distance between dynamo or electric motors and standard compass *128 feet*

Distance between dynamo or electric motors and steering compass *120 feet*

The nearest cables to the compasses are as follows:—

A cable carrying	<i>4</i> Amperes	<i>14</i> feet from standard compass	<i>8</i> feet from steering compass
A cable carrying	<i>1/2</i> Amperes	<i>10</i> feet from standard compass	<i>6</i> feet from steering compass
A cable carrying	<i>1/4</i> Amperes	<i>inside</i> feet from standard compass	<i>inside</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 *✓* degrees on *✓* course in the case of the standard compass and *✓* degrees on *✓* course in the case of the steering compass.

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DIRECTOR

Builder's Signature. Date *27th April 1923*

GENERAL REMARKS.

The Dynamos and installation has been fitted according to the Rules, the material and workmanship satisfactory and a full power trial of 12 hours duration has been run with satisfactory results.

It is submitted that this vessel is eligible for THE RECORD. Elec. light. *AWD 8/5/23* Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. MAY. 11 1923

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.

