

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 995.

Port of Cadiz Date of First Survey 22 - 12 - 22 / 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 66582 Built at Cadiz By whom Sociedad Española de Construcción When built 1923.
 Owners Cia. Transatlantica Owners' Address Cadiz.
 Yard No. 47 Electric Light Installation fitted by S. E. de C. N. Cadiz When fitted 1923.

DESCRIPTION OF DYNAMO, ENGINE, ETC.

3 "CASTLE" Dynamos fitted, Makers 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,
Mess Room, 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:—
 16. 25. 32. 50. 100. 200. W.F.A.S. MOTORS.
 A B C D 305 lights each of 164. 36. 6. 7. 43. candle power requiring a total current of 68.0 Amperes
 B E F G H 372 lights each of 240. 85. 15. 23. 17. 43. 10. candle power requiring a total current of 166.8 Amperes
 C I J K L 196 lights each of 174. 13. 7. 2. 23. 10. candle power requiring a total current of 251.2 Amperes
 D M N O P 121 lights each of 96. 14. 11. 9. candle power requiring a total current of 50.8 Amperes
 E Q R S T U 250 lights each of 142. 39. 9. 26. 10. candle power requiring a total current of 77.0 Amperes
 2 Mast head light with 2 lamps each of 32 cp. candle power requiring a total current of 1/2 Amperes
 2 Side light with 2 lamps each of 32 cp. candle power requiring a total current of 1/2 Amperes
 30 Cargo lights of 100 candle power, whether incandescent or arc lights incandescent.
 If arc lights, what protection is provided against fire, sparks, &c. Yes

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

DESCRIPTION OF CABLES.

Main cable carrying	316 Amperes, comprised of	61 wires, each	12 S.W.G. diameter,	.578 square inches total sectional area
	110	19	14	.0955
Branch cables carrying	102 Amperes, comprised of	14 wires, each	13 S.W.G. diameter,	.0924 square inches total sectional area
	47	7	14	.0350
Branch cables carrying	40 Amperes, comprised of	7 wires, each	16 S.W.G. diameter,	.0225 square inches total sectional area
	20	7	20	.0070
Leads to lamps carrying	1 Amperes, comprised of	1 wires, each	17 S.W.G. diameter,	.0024 square inches total sectional area
	1	1	18	.0018
Cargo light cables carrying	3 Amperes, comprised of	1 wires, each	17 S.W.G. diameter,	.0024 square inches total sectional area

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.

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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 *Yes*

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 *Yes*

How are the returns from the lamps connected to the hull *Yes*

Are all the joints with the hull in accessible positions *Yes*

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 *Yes*

How are the lamps specially protected in places liable to the accumulation of vapour or gas *Yes*

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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POR LA SOCIEDAD ESPAÑOLA DE CONSTRUCCION NAVAL

Electrical Engineers

Date *27th April 1923*

COMPASSES.

DIRECTOR

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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POR LA SOCIEDAD ESPAÑOLA DE CONSTRUCCION NAVAL

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.

Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI. MAY. 11 1923*



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