

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office -7 OCT 1935

Date of writing Report 30th Sept 1935 When handed in at Local Office 30th Sept 1935 Port of Barcelona

No. in Survey held at Barcelona. Date, First Survey 2nd May. Last Survey 26th Sept 1935

Reg. Book. 22157, on the TWIN S. "CAMPALANS" (Number of Visits... 5.....)

Built at Vigo. By whom built Hijos de Barro S.A. Yard No. \_\_\_\_\_ Tons { Gross 1060  
Net 498

Owners Bia. Arrendatária del Monopolio de Petroleos S.A. Port belonging to Barcelona. When built 1934-8

Electric Light Installation fitted by Talleres Nuevo Vulcan. Barcelona. Contract No. ✓ When fitted 1935.

Is the Vessel fitted for carrying Petroleum in bulk Carrying oil in bulk F.P. above 150°F.

System of Distribution Parallel constant pressure, two wire insulated.

Pressure of supply for Lighting 110 volts, Heating ✓ volts, Power ✓ volts.

Direct or Alternating Current, Lighting Direct Power ✓

If alternating current system, state frequency of periods per second ✓

Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off None. efficient flywheel.

Generators, do they comply with the requirements regarding temperature rise \_\_\_\_\_, are they compound wound No. Shunt.

are they over compounded 5 per cent. ✓, if not compound wound state distance between each generator 2 metres.

Where more than one generator is fitted are they arranged to run in parallel No, is an adjustable regulating resistance fitted in series with each shunt field Yes.

Have certificates of test results for machines under 100 kw. been submitted and approved No. Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing ✓

Are all terminals accessible, clearly marked, and furnished with sockets Yes., are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched Yes

Are the lubricating arrangements of the generators as per Rule Yes

Position of Generators After end of engine room., is the ventilation in way of the generators satisfactory Yes

are they clear of all inflammable material Yes if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the generators ✓ and ✓

are the generators protected from mechanical injury and damage from water, steam or oil Yes, are their axes of rotation fore and aft Yes

Earthing, are the bedplates and frames of the generating plant efficiently earthed Yes are the prime movers and their respective generators in metallic contact Yes

Main Switch Boards, where placed on bulkhead at after end of engine room.

If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard ✓

Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes Yes, are they protected from mechanical injury and damage from water, steam or oil Yes

if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards ✓ and ✓, are they constructed wholly of durable, non-ignitable non-absorbent materials Yes

is all insulation of high dielectric strength and of permanently high insulation resistance Slate panel

is it of an approved type \_\_\_\_\_, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micamite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework Yes

is the non-hygroscopic insulating material of an approved type Mica, and is the frame effectively earthed Yes

Are the fittings as per Rule regarding:— spacing or shielding of live parts Yes, accessibility of all parts Yes, absence of fuses on back of board Yes

temperature rise of omnibus bars ✓, individual fuses to voltmeter, pilot or earth lamp Yes, are moving parts of switches alive in the "off" position No

are all screws and nuts securing connections effectively locked No are any fuses fitted on the live side of switches No

Main Switchgear, description of switchgear for each generator, and each outgoing circuit, and arrangement of equalizer switches Aux. generator circuit fitted with double pole switch and fuse on each pole. Main generator switch on main switchboard replaced by change over switch to avoid paralleling of generators.

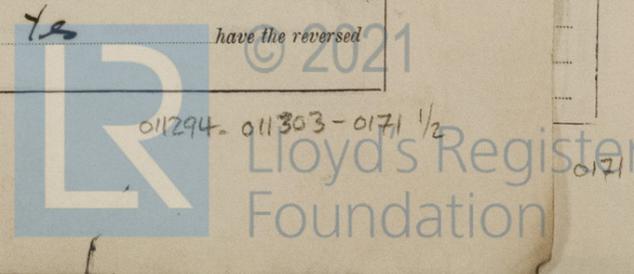
Are turbine driven generators fitted with emergency trip switch as per rule ✓ Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material ✓

Instruments on main switchboard Aux \_\_\_\_\_ ammeter \_\_\_\_\_ voltmeters ✓ \_\_\_\_\_ synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection ✓

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system ✓

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules Yes are the fusible cutouts of an approved type Yes have the reversed ✓

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current protection devices been tested under working conditions  **Joint Boxes, Section and Distribution Boards**, is the construction, protection, insulation, material, and position of these as per rule 7/5

**Cables**: Single, twin, concentric, or otherwise single insulated protected per Tables IV, V, X or XI of the Rules 7/5

If the cables are insulated otherwise than as per Rule, are they of an approved type  **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load 7/5

**Cable Sockets**, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets 7/5

**Paper Insulated and Varnished Cambric Insulated Cables**, If conductors are paper or varnished cambric insulated, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound  or waterproof insulating tape  and glass

**Cable Runs**, are the cables fixed as far as possible in accessible positions not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical damage run in conduit

Are cables in machinery spaces, galleys, lavatories, bathrooms and lavatories covered or run in conduit

**Support and Protection of Cables**, state how the cables are supported and protected Steel Conduit clipped to vessel

If cables are run in wood casings, are the casings and caps secured by screws  are the cap screws of brass  are the cables run in separate grooves  If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII

**Refrigerated Chambers**, are the cables and fittings in accordance with the special requirements

**Joints in Cables**, state if any, and how made, insulated, and protected None

**Watertight Glands and Deck Tubes**, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands

**Bushes in Beams and Non-watertight Partitions**, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed  state the material of which the bushes are made

**Earthing Connections**, state what earthing connections are fitted and their respective sectional areas are their connections made as per Rule

**Alternative Lighting**, are the groups of lights in the propelling machinery space arranged as per Rule Emergency Supply, state position and method of control of the emergency supply and how the generator is driven

**Navigation Lamps**, are these separately wired controlled by separate switch and separate fuses are the fuses double pole are the switches and fuses grouped in a position accessible only to the officers on watch has each navigation lamp an automatic indicator as per Rule Secondary Batteries, are they constructed and fitted as per Rule

**Fittings**, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected how are the cables led

where are the controlling switches situated are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials

**Heating and Cooking Appliances**, are they constructed and fitted as per Rule are air heaters constructed and fitted as per Rule

**Searchlight Lamps**, No. of whether fixed or portable are their fittings as per Rule

**Arc Lamps**, other than searchlight lamps, No. of are their live parts insulated from the frame or case are their fittings as per Rule

**Motors**, are their working parts readily accessible are the coils self-contained and readily removable for replacement are the brushes, brush holders, terminals and lubricating arrangements as per Rule are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material are they protected from mechanical injury and damage from water, steam or oil are their axes of rotation fore and aft if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type if not of this type, state distance of the combustible material horizontally or vertically above the motors and have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing **Control Gear and Resistances**, are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule **Lightning Conductors**, where lightning conductors are required, are these fitted as per Rule **Ships carrying Oil having a Flash Point less than 150° F.** Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings are all fuses of the filled cartridge type are they of an approved type

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office

**Spare Gear**, if the vessel is for open sea service have spares been supplied as per Rule

| PARTICULARS OF GENERATING PLANT. |        |            |        |       |                |                         |  |                      |  |
|----------------------------------|--------|------------|--------|-------|----------------|-------------------------|--|----------------------|--|
| DESCRIPTION OF GENERATOR.        | No. of | RATED AT   |        |       |                | DRIVEN BY               | WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE. |                      |  |
|                                  |        | Kilowatts. | Volts. | Amps. | Revs. per Min. |                         | Fuel Used.                                     | Flash Point of Fuel. |  |
| MAIN                             | 1      |            |        |       |                |                         |  |                      |  |
| AUXILIARY                        | 2      | 4.6        | 110    | 40    | 1000           | Bolube heavy oil engine | fuel oil                                       | flash point 150° F   |  |
| EMERGENCY                        |        |            |        |       |                |                         |  |                      |  |
| ROTARY TRANSFORMER               |        |            |        |       |                |                         |  |                      |  |

| GENERATOR, LIGHTING AND HEATING CONDUCTORS. |               |                                      |                        |           |                        |       |   |                |                |
|---|---------------|--------------------------------------|------------------------|-----------|------------------------|-------|---|----------------|----------------|
| DESCRIPTION.                                | CONDUCTORS.   |                                      | COMPOSITION OF STRAND. |           | TOTAL MAXIMUM CURRENT. |       | Approximate Length. (Lead and Return) Feet. | Insulated with | HOW PROTECTED. |
|   | No. per Pole. | Total Nominal Area per Pole Sq. Ins. | No.                    | Diameter. | Circuit.               | Rate. |   |                |                |
| MAIN GENERATOR                              |               |                                      |                        |           |                        |       |   |                |                |
| EQUALISING CONNECTIONS                      |               |                                      |                        |           |                        |       |   |                |                |
| AUXILIARY GENERATOR                         | 25            |                                      | 1                      | 2.3       | 40                     | 63    | 2 1/2                                       | Rubber         | Electrically   |
| EMERGENCY GENERATOR                         |               |                                      |                        |           |                        |       |   |                |                |
| ROTARY TRANSFORMER MOTOR GENERATOR          |               |                                      |                        |           |                        |       |   |                |                |
| ENGINE ROOM                                 |               |                                      |                        |           |                        |       |   |                |                |
| BOILER ROOM                                 |               |                                      |                        |           |                        |       |   |                |                |
| AUXILIARY SWITCHBOARDS                      |               |                                      |                        |           |                        |       |   |                |                |
| ACCOMMODATION                               |               |                                      |                        |           |                        |       |   |                |                |
| WIRELESS                                    |               |                                      |                        |           |                        |       |   |                |                |
| SEARCHLIGHT                                 |               |                                      |                        |           |                        |       |   |                |                |
| MASTHEAD LIGHT                              |               |                                      |                        |           |                        |       |   |                |                |
| SIDE LIGHTS                                 |               |                                      |                        |           |                        |       |   |                |                |
| COMPASS LIGHTS                              |               |                                      |                        |           |                        |       |   |                |                |
| POOP LIGHTS                                 |               |                                      |                        |           |                        |       |   |                |                |
| CARGO LIGHTS                                |               |                                      |                        |           |                        |       |   |                |                |
| ARC LAMPS                                   |               |                                      |                        |           |                        |       |   |                |                |
| HEATERS                                     |               |                                      |                        |           |                        |       |   |                |                |

| MOTOR CONDUCTORS.       |                |               |                                      |                        |           |                        |       |   |                |                |
|-------------------------|----------------|---------------|--------------------------------------|------------------------|-----------|------------------------|-------|---|----------------|----------------|
| DESCRIPTION.            | No. of Motors. | CONDUCTORS.   |                                      | COMPOSITION OF STRAND. |           | TOTAL MAXIMUM CURRENT. |       | Approximate Length. (Lead and Return) Feet. | Insulated with | HOW PROTECTED. |
|                         |                | No. Per Pole. | Total Nominal Area per Pole Sq. Ins. | No.                    | Diameter. | In Circuit.            | Rate. |   |                |                |
| BALLAST PUMP            |                |               |                                      |                        |           |                        |       |   |                |                |
| MAIN BILGE LINE PUMPS   |                |               |                                      |                        |           |                        |       |   |                |                |
| GENERAL SERVICE PUMP    |                |               |                                      |                        |           |                        |       |   |                |                |
| EMERGENCY BILGE PUMP    |                |               |                                      |                        |           |                        |       |   |                |                |
| SANITARY PUMP           |                |               |                                      |                        |           |                        |       |   |                |                |
| CIRC. SEA WATER PUMPS   |                |               |                                      |                        |           |                        |       |   |                |                |
| CIRC. FRESH WATER PUMPS |                |               |                                      |                        |           |                        |       |   |                |                |
| AIR COMPRESSOR          |                |               |                                      |                        |           |                        |       |   |                |                |
| FRESH WATER PUMP        |                |               |                                      |                        |           |                        |       |   |                |                |
| ENGINE TURNING GEAR     |                |               |                                      |                        |           |                        |       |   |                |                |
| ENGINE REVERSING GEAR   |                |               |                                      |                        |           |                        |       |   |                |                |
| LUBRICATING OIL PUMPS   |                |               |                                      |                        |           |                        |       |   |                |                |
| OIL FUEL TRANSFER PUMP  |                |               |                                      |                        |           |                        |       |   |                |                |
| WINDLASS                |                |               |                                      |                        |           |                        |       |   |                |                |
| WINCHES, FORWARD        |                |               |                                      |                        |           |                        |       |   |                |                |
| WINCHES, AFT            |                |               |                                      |                        |           |                        |       |   |                |                |
| STEERING GEAR—          |                |               |                                      |                        |           |                        |       |   |                |                |
| (a) MOTOR GENERATOR     |                |               |                                      |                        |           |                        |       |   |                |                |
| (b) MAIN MOTOR          |                |               |                                      |                        |           |                        |       |   |                |                |
| WORKSHOP MOTOR          |                |               |                                      |                        |           |                        |       |   |                |                |
| VENTILATING FANS        |                |               |                                      |                        |           |                        |       |   |                |                |

All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electro-technical Commission Publication No. 28).

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

TALLERES NUEVO VULCANO

*[Signature]*  
Ingeniero-Director

Electrical Engineers.

Date 30/9/35.

COMPASSES.

Distance between electric generators or motors and standard compass

Distance between electric generators or motors and steering compass

The nearest cables to the compasses are as follows:—

A cable carrying Ampères feet from standard compass feet from steering compass.

A cable carrying Ampères feet from standard compass feet from steering compass.

A cable carrying Ampères feet from standard compass feet from steering compass.

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

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted

The maximum deviation due to electric currents 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.

Builder's Signature. Date

Is this installation a duplicate of a previous case *No* If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c.)

The particulars noted in this report refer to the fitting of an auxiliary generator for standby use in port only. The installation has been fitted in accordance with the Rules and the approved plan (Secretary's letter E 25/4/35) excepting for the recommendations below which still require to be carried out. The materials and workmanship are efficient and in my opinion the vessel is eligible to remain as classed without fresh record of Survey.

Recommendations outstanding to complete the installation:— cables behind Auxiliary Switchboard to be adequately supported and lock nuts to be fitted to screws supporting fittings. Guard rail to fit around generator engine flywheel. It was stated that these recommendations will be dealt with when the vessel is dry docked for overhaul towards the end of next month.

Total Capacity of Generator *Ass* 4.6 Kilowatts.

The amount of Fee ... *Rs 250* : When applied for, 30.9.1935  
Travelling Expenses (if any) *Rs 8* : When received,  19

*[Signature]*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 17 DEC 1935

Assigned See Bel. Rpt-5290

*Handwritten notes:*  
Hawait Inspector  
16/10/35

2m.534.—Transfer.  
The Surveyors are requested not to write on or below the space for Committee's Minute.