

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL) 17 JUL 1931

Received at London Office

Date of writing Report 19 When handed in at Local Office 16/7/31 Port of NEWCASTLE-ON-TYNE

No. in Survey held at NEWCASTLE ON TYNE Date, First Survey 22 April Last Survey 7 July 1931  
Reg. Book. (Number of Visits 6)

92028 on the PAN BOLIVAR

Tons { Gross  
Net

Built at NEWCASTLE ON TYNE By whom built SWAN HUNTER & W.R. LTD. Yard No. 1465 When built 1931

Owners PAN AMERICAN PETROLEUM & TRANSPORT CO. Port belonging to LOS ANGELES.

Electric Light Installation fitted by SWAN HUNTER & W.R. LTD. Contract No. 1465. When fitted 1931

Is the Vessel fitted for carrying Petroleum in bulk YES. ✓

System of Distribution Double Wire ✓

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

Direct or Alternating Current, Lighting Direct Power Direct

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 Yes

Generators, do they comply with the requirements regarding rating Yes, are they compound wound Yes

are they over compounded 5 per cent. Yes, if not compound wound state distance between each generator —

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

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 On Dynamo Flat at Aft 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 Dynamo Flat, at Aft 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 Yes

if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework Yes

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, proportion of omnibus bars Yes

individual fuses to voltmeter, pilot or earth lamp Yes, connections of switches Yes

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches Double Pole

Main Change-over switch for generators, and Double Pole Quick Break Knife switch for each outgoing circuit.

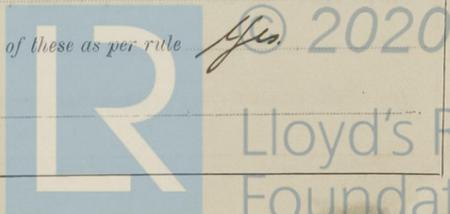
Instruments on main switchboard 2 ammeters 1 voltmeters — synchronising device for paralleling purposes.

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

connected to earth through switches & fuses.

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules Yes

Joint Boxes Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule Yes



**Cables:** Single, twin, concentric, or multicore Single are the cables insulated and protected as per Tables IV or V of the Rules Yes

**Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load 25 volts

**Cable Sockets and other connections,** are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets Yes

**Paper Insulated Cables.** If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound —

**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 Yes

**Support and Protection of Cables,** state how the cables are supported and protected L.C. cable clipped up in Accommodation.  
L.C. Braided in galvanized iron pipe under gangway, L.C. Armoured cable clipped up in machinery spaces.  
 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 Yes

**Refrigerated Chambers,** if lights are fitted, are the cables and fittings in accordance with the special requirements Yes

**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 Yes

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

**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 Yes

**Emergency Supply,** state position and method of control of the emergency supply and how the generator is driven —

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

**Secondary Batteries,** are they constructed and fitted as per Rule nil

**Fittings,** are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight Yes  
 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 Yes. In Pump Room in special gastight fittings in galvanized iron piping.  
 where are the controlling switches situated midship passage, port side.

**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 Yes, are the coils self-contained and readily removable for replacement Yes  
 are the brushes, brush holders, terminals and lubricating arrangements as per Rule Yes, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material Yes  
 are they protected from mechanical injury and damage from water, steam or oil Yes are their axes of rotation fore and aft Yes  
 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 —

**Control Gear and Resistances,** are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule Yes

**Lightning Conductors,** where lightning conductors are required, are these fitted as per Rule Yes

**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 Yes  
 If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office Yes.

| PARTICULARS OF GENERATING PLANT. |        |            |        |          |                |                          |  |                      |  |
|----------------------------------|--------|------------|--------|----------|----------------|--------------------------|--|----------------------|--|
| DESCRIPTION OF GENERATOR.        | No. of | RATED AT   |        |          |                | DRIVEN BY                | WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE. |                      |  |
|                                  |        | Kilowatts. | Volts. | Ampères. | Revs. per Min. |                          | Fuel Used.                                     | Flash Point of Fuel. |  |
| MAIN                             | 2      | 15         | 110    | 136      | 600            | Robey S.C. Enclosed Type |  |                      |  |
| AUXILIARY                        |        |            |        |          |                | Steam engine.            |  |                      |  |
| 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 Effective Area per Pole Sq. Ins. | No.                    | Diameter. | In Circuit.            | Rate. |  |                |                      |
| MAIN GENERATOR                              | 1             | .1478                                  | 37                     | .072      | 136                    | 152   | 25   | V.I.R.         | L.C. Braided in Pipe |
| EQUALISER CONNECTIONS                       |               |  |                        |           |                        |       |  |                |                      |
| AUXILIARY GENERATOR                         |               |  |                        |           |                        |       |  |                |                      |
| EMERGENCY GENERATOR                         |               |  |                        |           |                        |       |  |                |                      |
| ROTARY TRANSFORMER                          |               |  |                        |           |                        |       |  |                |                      |
| ENGINE ROOM                                 | 1             | .01046                                 | 7                      | .044      | 25                     | 31    | 60   | do             | L.C. & A.            |
| BOILER ROOM                                 |               |  |                        |           |                        |       |  |                |                      |
| AUXILIARY SWITCHBOARDS                      |               |  |                        |           |                        |       |  |                |                      |
| ACCOMMODATION Aft                           | 1             | .01046                                 | 7                      | .044      | 24                     | 31    | 140  | do             | L.C. Braided         |
| Navigation midship                          | 1             | .07292                                 | 19                     | .072      | 48                     | 97    | 710  | do             | do                   |
| WIRELESS                                    | 1             | .02214                                 | 7                      | .064      | 15                     | 46    | 725  | do             | do                   |
| SEARCHLIGHT                                 |               |  |                        |           |                        |       |  |                |                      |
| MASTHEAD LIGHT                              | 1             | .00194                                 | 3                      | .029      | 3                      | 7.8   | 420  | do             | do                   |
| SIDE LIGHTS                                 | 1             | .00194                                 | 3                      | .029      | 3                      | 7.8   | 90   | do             | L.C.                 |
| COMPASS LIGHTS                              | 1             | .00194                                 | 3                      | .029      | 1                      | 7.8   | 60   | do             | do                   |
| SEEN FROM AFT LIGHTS                        | 1             | .00194                                 | 3                      | .029      | 3                      | 7.8   | 790  | do             | L.C. & Braided       |
| CARGO LIGHTS                                | 1             | .00194                                 | 3                      | .029      | 2.5                    | 7.8   | 80   | do             | L.C.                 |
| 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 Effective 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          | 1              | 1             | .02214                                 | 7                      | .064      | 40                     | 46    | 96   | V.I.R.         | L.C. & A.      |
| VENTILATING FANS        | 2              | 1             | .00194                                 | 3                      | .029      | 6                      | 7.8   | 50   | do             | L.C.           |
| Oil Purifier            | 1              | 1             | .00194                                 | 3                      | .029      | 2.6                    | 7.8   | 100  | do             | L.C. & A.      |

All Conductors are of annealed copper conforming to British Standard Specification No. 7.

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

The foregoing is a correct description.

FOR SWAN, HUNTER, & WIGHAM RICHARDSON, LTD. Electrical Engineers.

Date 13<sup>th</sup> July 31.

COMPASSES.

Distance between electric generators or motors and standard compass 288 feet Approx

Distance between electric generators or motors and steering compass 285 feet Approx

The nearest cables to the compasses are as follows:—

A cable carrying .1 Ampères 5 feet from standard compass inside feet from steering compass.

A cable carrying .1 Ampères inside feet from standard compass 5 feet from steering compass.

A cable carrying 7.8 Ampères 6 feet from standard compass 8 feet from steering compass.

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

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

The maximum deviation due to electric currents was found to be nil degrees on any course in the case of the standard compass, and nil degrees on any course in the case of the steering compass.

FOR SWAN, HUNTER, & WIGHAM RICHARDSON, LTD. Builder's Signature.

Date 13 July 1931

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. This installation has been fitted on board under special survey, and has been tested under full working conditions and found satisfactory.

The materials and workmanship were found to be good and sound.

It is submitted that this vessel is eligible for THE RECORD.

Elect. Light:

[Signature] 9/8/31

Total Capacity of Generators 30 Kilowatts.

The amount of Fee ... £ 22 : 10 : 14.7.1931

Travelling Expenses (if any) £ : : 29.8.31

R. C. Clayton, Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned

[Signature]



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1m, 630, -1 Transfer. (The Surveyors are requested not to write on or below the space for Committee's Minute.)