

MAY 31 1939

Rpt. 13.

No. 61159

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

Date of writing Report 17-5-39, When handed in at Local Office 30:5:39 Port of Glasgow  
 No. in Survey held at Port Glasgow. Date, First Survey 16:3:39 Last Survey 18-5-1939  
 Reg. Book. on the T.S.M.V. "BARIMA" (Number of Visits 11)  
 Tons { Gross 278  
 Net 111  
 Built at Port Glasgow By whom built Ferguson Bros Ltd. Yard No. 340 When built 1939  
 Owners Govt. British Guiana Port belonging to  
 Electric Light Installation fitted by J. Charters Contract No. 340 When fitted 1939  
 Is the Vessel fitted for carrying Petroleum in bulk No

## System of Distribution

two wire.

## Pressure of supply for Lighting

220

volts, Heating

volts, Power

220

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 temperature rise

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

yes

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

yes

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

in engine room

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

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 near generators

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

is it of an approved type

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

sindamp

is the non-hygroscopic insulating material of an approved

type

yes

yes

Are the fittings as per Rule regarding:— spacing or shielding of live parts

accessibility of all parts

yes

absence of fuses on back of board

yes

temperature rise of

omnibus bars

yes

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

yes

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

D.P. circuit breaker with 1/2 and R.C. trips and interlocked equaliser switch for each generator. D.P. switch and fuses for each outgoing circuit.

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

2

ammeters

2

voltage

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

yes

earth lamps.

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



current protection devices been tested under working conditions yes

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, V, X or XI of the Rules yes

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 2.5 Volts.

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

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 — Paper Insulated and Varnished Cambric Insulated Cables.

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. Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit yes

Support and Protection of Cables, state how the cables are supported and protected L.C. cables clipped.

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, 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 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 lead sheath earthed by means of clips or binding glands.

, 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 —

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 —

, how are the cables led —

where are the controlling switches situated —

are all fittings suitably ventilated yes, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials yes

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 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 are for fire 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 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 —

are all fuses of the fitted 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 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                      | 1      | 30         | 220    | 137      | 1100           | I.C. Engine | oil  | above 150° F.        |
| AUXILIARY                 | 1      | 15         | 220    | 68       | 1100           | "           | "  | "                    |
| 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.               | Rule. |  |                |                |
| MAIN GENERATOR         | 1             | .15                                  | 37                     | .072      | 137                    | 152   | 60   | Rubber         | L.C.           |
| EQUALISER CONNECTIONS  | 1             | .06                                  | 19                     | .064      | —                      | 83    | 30   | "              | "              |
| AUXILIARY GENERATOR    | 1             | .06                                  | 19                     | .064      | 68                     | 83    | 92   | "              | "              |
| EMERGENCY GENERATOR    | 1             | .06                                  | 19                     | .064      | —                      | 83    | 46   | "              | "              |
| ROTARY TRANSFORMER     |               |                                      |                        |           |                        |       |  |                |                |
| ENGINE ROOM            | 1             | .0045                                | 7                      | .029      | 6.4                    | 18.2  | 32   | "              | "              |
| BOILER ROOM            |               |                                      |                        |           |                        |       |  |                |                |
| AUXILIARY SWITCHBOARDS |               |                                      |                        |           |                        |       |  |                |                |
| ACCOMMODATION          |               |                                      |                        |           |                        |       |  |                |                |
| PROMENADE BRIDGE OK.   | 1             | .0045                                | 7                      | .029      | 8.0                    | 18.2  | 84   | "              | "              |
| FORWARD                | 1             | .0045                                | 7                      | .029      | 4.5                    | 18.2  | 160  | "              | "              |
| NAVIGATION.            | 1             | .0045                                | 7                      | .029      | 7                      | 18.2  | 112  | "              | "              |
| WIRELESS               |               |                                      |                        |           |                        |       |  |                |                |
| SEARCHLIGHT            |               |                                      |                        |           |                        |       |  |                |                |
| MASTHEAD LIGHT         | 1             | .003                                 | 3                      | .036      | 18                     | 12    | 240  | "              | "              |
| SIDE LIGHTS            | 1             | .003                                 | 3                      | .036      | 18                     | 12    | 50   | "              | "              |
| COMPASS LIGHTS         | 1             | .003                                 | 3                      | .036      | 07                     | 12    | 30   | "              | "              |
| 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.            | Rule. |  |                |                |
| BALLAST PUMP            |                |               |                                      |                        |           |                        |       |  |                |                |
| MAIN BILGE LINE PUMPS   | 2              | 1             | .0045                                | 7                      | .029      | 13.1                   | 18.2  | 116  | Rubber         | L.C.           |
| GENERAL SERVICE PUMP    |                |               |                                      |                        |           |                        |       |  |                |                |
| EMERGENCY BILGE PUMP    |                |               |                                      |                        |           |                        |       |  |                |                |
| SANITARY PUMP           | 1              | 1             | .0045                                | 7                      | .029      | 2.4                    | 18.2  | 116  | "              | "              |
| CIRC. SEA WATER PUMPS   | 1              | 1             | .0045                                | 7                      | .029      | 13.1                   | 18.2  | 72   | "              | "              |
| CIRC. FRESH WATER PUMPS |                |               |                                      |                        |           |                        |       |  |                |                |
| AIR COMPRESSOR          |                |               |                                      |                        |           |                        |       |  |                |                |
| FRESH WATER PUMP        |                |               |                                      |                        |           |                        |       |  |                |                |
| ENGINE TURNING GEAR     |                |               |                                      |                        |           |                        |       |  |                |                |
| ENGINE REVERSING GEAR   |                |               |                                      |                        |           |                        |       |  |                |                |
| LUBRICATING OIL PUMPS   | 1              | 1             | .0045                                | 7                      | .029      | 5                      | 18.2  | 80   | "              | "              |
| OIL FUEL TRANSFER PUMP  |                |               |                                      |                        |           |                        |       |  |                |                |
| WINDLASS                | 1              | 1             | .01                                  | 7                      | .044      | 25                     | 31    | 180  | "              | "              |
| WINCHES, FORWARD        | 3              | 1             | .12                                  | 37                     | .064      | 155                    | 160   | 168  | "              | "              |
| CAPSTAN AFT             | 1              | 1             | .01                                  | 7                      | .044      | 25                     | 31    | 164  | "              | "              |
| WINCHES, AFT            |                |               |                                      |                        |           |                        |       |  |                |                |
| STEERING GEAR—          |                |               |                                      |                        |           |                        |       |  |                |                |
| (a) MOTOR GENERATOR     |                |               |                                      |                        |           |                        |       |  |                |                |
| (b) MAIN MOTOR          |                |               |                                      |                        |           |                        |       |  |                |                |
| WORKSHOP MOTOR          |                |               |                                      |                        |           |                        |       |  |                |                |
| VENTILATING FANS        |                |               |                                      |                        |           |                        |       |  |                |                |
| SYREN                   | 1              | 1             | .0045                                | 7                      | .029      | 11                     | 18.2  | 90   | "              | "              |



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.

*J. Charters*

Electrical Engineers.

Date *18<sup>th</sup> May 1939.*

#### COMPASSES.

Distance between electric generators or motors and standard compass

Distance between electric generators or motors and steering compass

*6 ft.*

The nearest cables to the compasses are as follows:—

A cable carrying *07* Ampères *led into* feet from standard compass — feet from steering compass.

A cable carrying *75* Ampères *7* feet from standard compass — feet from steering compass.

A cable carrying *11* Ampères *7* 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*

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 *1/2* degrees on *any* course ~~in the case of the standard~~

FERGUSON BROTHERS (PORT-GLASGOW) LTD.

*Peter Ferguson* DIRECTOR

Builder's Signature.

Date

Is this installation a duplicate of a previous case *yes.* If so, state name of vessel *"LADY NORTHCOTE"*

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

*The electrical equipment of this vessel has been fitted on board under special survey, tested under full working conditions and found satisfactory. The materials and workmanship are good.*

*26*  
*29/5/39*

*Noted.*  
*L.H.*  
*2/6/39.*

Total Capacity of Generators *45.* Kilowatts.

The amount of Fee ... *£26 : 5 :* When applied for, *at 2/6*

Travelling Expenses (if any) £ *6/3 :* When received, *30. 6. 19 39 6/17*

*R. I. Hinchison.*

Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW** **30 MAY 1939**

Assigned **SEE ACCOMPANYING MACHINERY REPORT.**



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