Rpt. 13.

No. E 584

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 5 OCT 1943

Date of writing Report 28th June 1943 When handed in at Local Office 28th June 1943 Port of Bilbao

No. in Reg. Book. 74846 25281 on the Twin Scr. S.S. HABANA Tons Gross 10551 Net 5915

Survey held at Bilbao Date, First Survey 7th September 1942 Last Survey 23rd of March 1943 (Number of Visits Ten)

Built at Bilbao By whom built Soc. Española de Construccion Naval Yard No. ✓ When built 1923-8

Owners Cia Trasatlantica Port belonging to Barcelona

Electric Light Installation fitted by Sociedad Española de construccion Naval Bilbao Contract No. ✓ When fitted 1923 refitted 1943

Is the Vessel fitted for carrying Petroleum in bulk NO

System of Distribution Two-wire with direct current

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 temperature rise* ✓, *are they compound wound* shunt *are they over compounded 5 per cent.* ✓, *if not compound wound state distance between each generator* 5 Mts. apart *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* ✓ *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 on engine room platform, *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* at Port-side engine room, as before.

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 in the same compartment

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* White mable, *is all insulation of high dielectric strength and of permanently high insulation resistance* yes, *is it of an approved type* as before, *if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework* yes mica, *is the non-hygroscopic insulating material of an approved type* yes as before, *and is the frame effectively earthed* yes. *Are the fittings as per Rule regarding :— spacing or shielding of live parts* yes as before, *accessibility of all parts* yes, *absence of fuses on back of board* yes, *temperature rise of omnibus bars* as before, *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*

the same as before

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* 3 *ammeters* 3 *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*

2 Earth testing 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 **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, 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* 3·9 volts **Cable Sockets,** *are the ends of all cables having a sectional area of* 0·04 *square inch and above provided with soldering sockets* yes **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* all rubber, *or waterproof insulating tape* ✓ **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 *Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit* lead + armoured

Support and Protection of Cables, *state how the cables are supported and protected* by clips and protected by armour

If cables are run in wood casings, are the casings and caps secured by screws yes, *are the cap screws of brass* yes, *are the cables run in separate grooves* yes. *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* yes

Joints in Cables, *state if any, and how made, insulated, and protected* by joint boxes

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* ✓.

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* yes, *are air heaters constructed and fitted as per Rule* ✓

Searchlight Lamps, No. of 2 fwd + 2 aft, *whether fixed or portable* portable, *are their fittings as per Rule* yes.

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* ✓

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* ✓ **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* yes

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT Kilowatts.	Volts.	Amperes.	Revs. per Min.	DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE. Fuel Used.	Flash Point of Fuel.
Main	3	70	110	635	500	Steam reciprocating engine	✓	✓
Auxiliary ...								
Emergency ...								
Rotary Transformer								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS. No. per Pole.	CONDUCTORS. Total Nominal Area per Pole Sq. Ins.	COMPOSITION OF STRAND. No.	COMPOSITION OF STRAND. Diameter.	TOTAL MAXIMUM CURRENT. AMPERES. Circuit.	TOTAL MAXIMUM CURRENT. AMPERES. Rule.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
Main Generator ... ... } Equaliser Connections ...	this conductors from generators to main switchboard and main switchboard remains intact & not been affected by fire. Therefor remain on board as before.								
~~Auxiliary Generator~~ ...									
~~Emergency Generator~~ ...									
~~Rotary Transformer~~ Motor ... Generator ...									
Engine Room	one	6.45	7	1.10	25 ✓	31	44 Mts.	rubber	lead + armoured
Boiler Room	one	9.43	7	1.30	25 ✓	37	64 -"-	-"-	-"- + -"-
Auxiliary Switchboards ...									
Officers	one	14.5	7	1.63	21 ✓	46	115 -"-	-"-	-"- + -"-
Engineers	one	6.45	7	1.10	21 ✓	31	50 -"-	-"-	-"- + -"-
Galley	one	41.0	19	1.8	86 ✓	90	75 -"-	-"-	-"- + -"-
Navigation lights	one	2.93	7	0.75	3 ✓	15	120 -"-	-"-	-"- + -"-
Crew accomodation	one	9.43	7	1.3	11 ✓	37	145 -"-	-"-	-"- + -"-
Passenger accomodation	one	9.43	7	1.3	15 ✓	37	90 -"-	-"-	-"- + -"-
Accommodation									
Wireless	one	19.4	19	1.10	21 ✓	53	90 Mts	rubber	lead + armoured
Searchlight	one	43.0	19	1.8	66 ✓	93	90 -"-	-"-	-"- + -"-
Masthead Light	2	0.97	1	1.10	3 ✓	5	100 -"-	-"-	-"- + -"-
Side Lights	2	0.97	1	1.10	0.6 ✓	5	15 -"-	-"-	-"- + -"-
Compass Lights	2	0.97	1	1.10	1.2 ✓	5	5 -"-	-"-	-"- + -"-
Poop Lights	2	0.97	1	1.10	0.6 ✓	5	100	-"-	-"- + -"-
Cargo Lights	2	3.16	37	0.8	3 ✓	3.6	15	-"-	-"- + -"-
Arc Lamps	✓								
Heaters									

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS. No. Per Pole.	CONDUCTORS. Total Nominal Area per Pole Sq. Ins.	COMPOSITION OF STRAND. No.	COMPOSITION OF STRAND. Diameter.	TOTAL MAXIMUM CURRENT. AMPERES. In Circuit.	TOTAL MAXIMUM CURRENT. AMPERES. Rule.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
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 4 HP...	one	one	35.5	19	1.32	32 ✓	64	26 Mts	rubber	lead + armoured
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 4 HP ...	one	one	14.3	7	1.63	32 ✓	46	25 Mts	rubber	lead + armoured
Ventilating Fans 1.6 HP...	-"-	-"-	-"-	-"-	1.63	15 ✓	46	50 Mts	-"-	-"- + -"-

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.

.....*Electrical Engineers.* *Date*.....

COMPASSES.

Distance between electric generators or motors and standard compass 95 MS

Distance between electric generators or motors and steering compass 90 MS

The nearest cables to the compasses are as follows :—

A cable carrying 0·2 *Ampères* 2 MS *feet from standard compass* 2 MS *feet from steering compass.*

A cable carrying 3 *Ampères* 4 MS *feet from standard compass* 3·5 MS *feet from steering compass.*

A cable carrying 21 *Ampères* 12 MS *feet from standard compass* 13 MS *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 ✓ *If so, state name of vessel* ✓

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

The Passenger, officers + crew accommodation of this vessel was burned by fire and nothing of the electrical instalation had suffer under the lower deck. Therefore only the cables + fittings from the main switchboard to all parts of the vessel have been renewed as per approved plans dated. 4-5-42. The whole instalation has been tested to full load found same satisfactory The main switchboard has been taken ashore complete, cleaned + overhauled.
The 3 generators also taken ashore, cleaned, dryded + overhauled and afterwards made the insulation + volt tests found them satisfactory. a megger test was made of the whole instalation found same above rule requirements.
As this vessel has been converted from a Passenger ship into a General cargo boat with only accommodation for 12 passengers, the amount of current has been greatly reduced + out of the 3 generators on board, one only is of ample power for all the lights + motors normaly used on board. The cables + fittings used in carrying out the instalation are as per rule requirements and the workmanship good.

Total Capacity of Generators 210 *Kilowatts.*

The amount of Fee ... ... £Rb. 2.500 — When applied for, 8/7/1943.

Travelling Expenses (if any) £ — When received. 21/7/1943.

A. de Nareno
Surveyor to Lloyd's Register of Shipping.

TUES. 14 DEC 1943

Committee's Minute.....

Assigned all minute on Rpt 9

2m,6,34.—Transfer.

The Surveyors are requested not to write on or below the space for Committee's Minute.