

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office AUG 11 1937

Date of writing Report 5.8.37 19 When handed in at Local Office 19 Port of HAMBURG

No. in Survey held at Kiel Date, First Survey 13.4.37 Last Survey 8.7.37 19
Reg. Book.24 576 on the Steel Sc. "Esso Bolívar" Tons { Gross 10 389
Net 6 081

Built at Kiel By whom built Fr. Krupp Germania Werft Yard No. 668 When built 1937

Owners Panama Transport Co. Port belonging to Panama R.P.

Electric Light Installation fitted by Fried. Krupp Germania Werft A.G. Contract No. When fitted 1937

Is the Vessel fitted for carrying Petroleum in bulk yes

System of Distribution 2 wire system

Pressure of supply for Lighting 110 volts, Heating-plats 110 volts, Power 110 volts.

Direct or Alternating Current, Lighting D.C. Power D.C.

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 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 sent with Rpt. Henry Durd ✓

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 engine room port side, 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 engine room port side

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

Ebonite asbestos, 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 micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework ✓, is the non-hygroscopic insulating material of an approved type ✓, 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 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

Generators: A double pole overload circuit breaker. Aug. limits. Double pole change over switches

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 yes Instruments on main switchboard 4 ammeters 2

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

Voltmeter with Ohm Scale and Pilot 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

m.s. "Esso Bolivar"

Electric Fittings:

Motors &c connected to the Switchboard of Midships Repr. Machinery.

Description	Conductors No. sp. mm.	Composition No. p. mm.	Current Circuit Rule	Length m.	Insulat.	Protection.
2 HP Fan	1 2.5	1 1.78	13.5 16	36	Rubber	Lead covered
1 HP "	1 2.5	1 1.78	7 16	38	"	" & armoured
5 HP "	1 2.5	1 1.78	3.5 16	16	"	"
Not Fan for Repr. Installation	1 2.5	1 1.78	12 16	14	"	"
No. 2	1 2.5	1 1.78	12 16	12	"	"
No. 3	1 2.5	1 1.78	12 16	10	"	"
No. 4	1 2.5	1 1.78	12 16	10	"	"
CO ₂ Compressor	1 2.5	1 1.3	59 63	16	"	"
CO ₂ "	1 2.5	1 1.3	59 63	18	"	"

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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 ☒ *yes*

Cables: Single, twin, concentric, or multicore, *single below* ^{3.5} are the cables insulated and protected as per Tables IV, V, X or XI of the Rules ☒ *X*

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 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 *none*, 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 covered*

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

One deck in way of crew's gangway protected with sheet iron

If cables are run in wood casings, are the casings and caps secured by screws *none*, are the cap screws of brass ☒ *yes*, 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 ☒ *yes*

Joints in Cables, state if any, and how made, insulated, and protected *water-tight 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 *Cheratin compound, hemp*

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 *none*

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected *in pump rooms*

Lamps fitted in gas-tight packets arranged outside in deck house and deck plating *for the latter in funnel*

where are the controlling switches situated *outside of pump rooms in bridge house*

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 *1*, whether fixed or portable *fixed*, are their fittings as per Rule ☒ *yes*

Arc Lamps, other than searchlight lamps, No. of ☒ *yes*, are their live parts insulated from the frame or case ☒ *yes*, 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 ☒ *yes* 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 *still more*

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*

are all fuses of the fitted cartridge type ☒ *yes* are they of an approved type ☒ *yes*

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

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 ...	2	30 each	115	260	375	Steam engine.		
AUXILIARY ...								
EMERGENCY ...								
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		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	240	91	1.84	260	272	15 18	Rubber	Lead covered and armoured
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR ...									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER } MOTOR GENERATOR...									
ENGINE ROOM ...	1	75	Copper bus bar		75				
BOILER ROOM ...									
AUXILIARY SWITCHBOARDS ...									
Bridge deck	1	150	61	1.77	160	206	220	"	"
Peep & upper deck	1	50	19	1.83	75	98.8	84	"	"
Workshop	1	50	19	1.83	120	102.5	90	"	"
Galley	1	70	37	1.55	136	123.7	116	"	"
Navigation lamps	1	2	1	1.6	16	15	264	"	"
Spoke connections	1	185	61	1.97	200	233	72	"	"
Test board E.C. - Store	1	4	19	.82	25 fuse	22	35	"	"
Refr. eng. alt	1	10	19	.82	30	38	145	"	"
" - midships	1	150	61	1.77	190	206	90	"	"
Boiler fans	1	70	37	1.55	115	123.7	80	"	"
WIRELESS ...	1	16	19	1.04	10	49	100	"	"
SEARCHLIGHT ...	1	4	19	.82	18.5	22	38	"	"
MASTHEAD LIGHT ...	1	2.5	1	1.78	.5	16	140	"	"
SIDE LIGHTS ...	1	2.5	1	1.78	.5	16	28	"	"
COMPASS LIGHTS ...	1	2.5	1	1.78	.5	16	28	"	"
POOP LIGHTS ...	1	2.5	1	1.78	.5	16	212	"	"
CARGO LIGHTS ...	1	2.5	1	1.78	.5	16	190	"	"
ARC LAMP GYRO COMPASS	1	10	19	.82	30	38	100	"	"
HEATERS, E.C. Store	1	70	37	1.55	136	123.7	100	"	"

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		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 ...									Rubber	Lead covered and armoured
MAIN BILGE LINE PUMPS										
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP										
SANITARY PUMP ...										
CIRC. SEA WATER PUMPS	1	1	2.5	1	1.78	13.6	16	42	"	"
CIRC. FRESH WATER PUMPS	1	1	2.5	1	1.78	5	16	58	"	"
CO ₂ COMPRESSOR ...	1	1	2.5	19	1.3	36	63	140	"	"
FRESH WATER PUMP ...										
ENGINE TURNING GEAR...										
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS	1	1	2.5	1	1.78	6	16	32	"	"
OIL FUEL TRANSFER PUMP...										
WINDLASS ...										
WINCHES, FORWARD										
Lub. oil separator	1	1	2.5	1	1.78	20	16	38	"	"
WINCHES, AFT										
STEERING GEAR—										
Rudder telomotor	1	1	10	19	.82	18	38	150	"	"
(a) Motor Generator										
Rudder angle trans-	1	1	2.5	1	1.78	4	16	145	"	"
(b) Main Motor										
WORKSHOP MOTOR										
VENTILATING FANS f. Boilers	2	1	10	19	.82	35	38	60	"	"
Lathe No. 1	1	1	2.5	19	1.3	60	63	16	"	"
" 2	1	1	2.5	1	1.78	8	16	24	"	"
Shaping machine	1	1	6	19	.64	20	29	26	"	"
Grinding "	1	1	2.5	1	1.78	5	16	28	"	"
Drilling "	1	1	2.5	1	1.78	16	16	24	"	"

See Continuation!



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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.

FRIED. KRUPP
GERMANIA WERFT
Aktiengesellschaft

Electrical Engineers.

Date 6-8-37

COMPASSES.

Distance between electric generators or motors and standard compass 60m

Distance between electric generators or motors and steering compass 65m

The nearest cables to the compasses are as follows:—

A cable carrying 4 Ampères close to feet from standard compass close to feet from steering compass.

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

A cable carrying 1 Ampères 1 feet from standard compass 1 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.

FRIED. KRUPP
GERMANIA WERFT
Aktiengesellschaft

Builder's Signature.

Date 6-8-37

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.)

This electric installation is a duplicate of the m.d. "Henry Dundas", Ham. Rpt. No. 22 296 with a few alterations, viz:— Midships refrigerating machinery. Please see Cont. Sheet. This ref. installation is intended to carry the Owners' own cargo, such as provisions &c for their factories at Aruba.

This electric installation has been fitted in accordance with the approved plans, the Secretary's instructions thereto and in compliance with the Society's Rules. Materials and workmanship are of good quality. It has given satisfaction under working conditions and was found in order.

Noted

Ymn

16.8.37

Total Capacity of Generators 60. - Kilowatts.

The amount of Fee RMAs £ 570.-

When applied for,

26.7.37 1937

When received,

27.8.37 1937

Travelling Expenses (if any) £

Committee's Minute

TUE. 17 AUG 1937

Assigned

See Ham R 22444

P.A. W. H. H. H.
Surveyor to Lloyd's Register of Shipping.



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