

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

JAN 26 1938

Date of writing Report *15.1.38* 19 When handed in at Local Office

Port of **HAMBURG**

No. in Survey held at *Kiel*

Date, First Survey *25.10.37*

Last Survey *8.1.38*

19

Reg. Book.

on the *Steel* *Se. "China"*

(Number of Visits *16*)

Tons

Gross *10 781*

Net *6545*

Built at *Kiel*

By whom built *Fr. Krupp Germania-Werft* Yard No. *569*

When built *1938*

Owners *Balboa Transport Corporation* Port belonging to *Panama R.P.*

Electric Light Installation fitted by *Fried. Krupp Germania-Werft A.G.* Contract No.

When fitted *1938*

Is the Vessel fitted for carrying Petroleum in bulk *yes*

System of Distribution *2 wire system*

Pressure of supply for Lighting *110* volts, Heating

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 *yes*

Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing *yes, Cert. attached*

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 *E.R. port and starboard*, 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 *yes* and *yes*

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 *E.R. front bulkhead*

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 *yes*

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 *yes* and *yes*, are they constructed wholly of durable, non-ignitable non-absorbent

materials *yes, 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 *yes*, is the non-hygroscopic insulating material of an approved

type *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*, 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

Gen: Double pole aut. overload circ. breakers. Out. Circs: Double pole change-over switches. Fuse on each pole

Are turbine driven generators fitted with emergency trip switch as per rule *yes* Are cupboards or compartments containing switchboards composed of

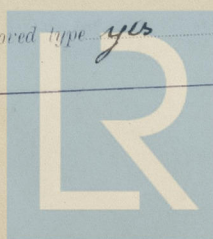
fire-resisting material or lined with approved material *yes* Instruments on main switchboard *8* ammeters *3*

voltmeters *yes* synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection

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

lamps and Voltmeter with Ohm scale Switches, Circuit Breakers and Fusible Cut-outs, *yes* have the reversed

do these comply with the requirements of the Rules *yes* are the fusible cutouts of an approved type *yes*



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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 2.5"* 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 *yes* ✓

Fall of Pressure, state maximum between bus bars and

any point of the installation under maximum load *2.8 lbs* ✓

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 *yes* ✓

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* ✓

On deck in way of crew's gangway running in conduit

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 *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 *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 *Cherraton compound, lead* ✓

Earthing Connections, state what earthing connections are fitted and their respective sectional areas

are their connections made as per Rule *yes* ✓

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 *yes* ✓

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 *yes* ✓

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* ✓

gas tight glass bowls ✓, how are the cables led

lead covered and armoured cables in conduit ✓

where are the controlling switches situated *outside of pump room 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 *yes* ✓

Searchlight Lamps, No. of *yes* ✓, whether fixed or portable *yes* ✓, 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 *yes* ✓

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, as far as practicable* ✓, 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 *yes* ✓

if not of this type, state distance of the combustible material horizontally or vertically above the motors *yes* ✓ and *yes* ✓

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing *yes* ✓

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 *steel masts* ✓ 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 *See Section E, 8-12-37* 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.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	135 each	115	175 each	420	Ans. Oil engines	Diesel oil	Ab. 150° F
AUXILIARY								
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	No. of	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. <i>mm</i>	No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATOR	3	400	91	2-37	3 x 392	1175	15	17	Ru55cm	Lead covered and armoured
EQUALISER CONNECTIONS										
AUXILIARY GENERATOR										
EMERGENCY GENERATOR										
ROTARY TRANSFORMER										
ENGINE ROOM										
BOILER ROOM	1	25	19	1-3	65	63	13			
AUXILIARY SWITCHBOARDS										
Bridge house	1	150	61	1-77	75	205	108			
Between Deck	1	10	19	-82	32	38	39			
Main Deck	1	16	19	1-04	40	49	33			
Contr. Navigat. Lamps	1	4	19	-52	5	22	138			
Steering gear	2	150	61	1-77	50 + 400	2 x 205	53			
Accommodation										
Store connection	1	185	61	1-97	-	233	17			
Control panel El. Store	1	4	19	-52	-	22	53			
Refry. Plant	1	35	19	1-53	80	78	38			
Workshop	2	35	19	1-53		78	53			
WIRELESS	1	16	19	1-04	35	49	80			
SEARCHLIGHT										
MASTHEAD LIGHT	1	2-5	1	1-78	-5	16	140			
SIDE LIGHTS	1	2-5	1	1-78	-5	16	30			
COMPASS LIGHTS	1	2-5	1	1-78	-5	16	25			
POOP LIGHTS	1	2-5	1	1-78	-5	16	210			
CARGO LIGHTS	1	2-5	1	1-78	-5	16	190			
Arc Lamps Gyro Compass	1	10	19	-82	30	38	80			
HEATERS										

Please see Section E, 8-12-37 to 8-12-39 for details of wiring and insulation.

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. <i>mm</i>	No.	Diameter.	In Circuit.	Rule.			
Drinking water										
BALAST PUMP	1	1	16	19	1-04	37-5	49	48	Rubber	Lead covered and armoured
MAIN BILGE LINE PUMPS	2	1	35	19	1-53	87-1	78	35		
GENERAL SERVICE PUMP	1	2	150	61	1-77	350	2 x 205	9		
EMERGENCY BILGE PUMP										
SANITARY PUMP	1	1	25	19	1-3	47	63	41		
CIRC. SEA WATER PUMPS	2	2	150	61	1-77	360	2 x 205	15		
CIRC. FRESH WATER PUMPS										
2 Air Compressors	2	1	10	19	-82	37	32	20		
FRESH WATER PUMP	1	1	25	19	1-3	55	63	41		
ENGINE TURNING GEAR	2	1	35	19	1-53	68	78	64 / 71		
Lub. Oil Separator	1	3	4	19	-52	72	3 x 22	48		
ENGINE REVERSE GEAR	1	1	25	19	1-3	54	63	60		
LUBRICATING OIL PUMPS (spare)	1	1	25	19	1-3	55	63	50		
OIL FUEL TRANSFER PUMP	1	1	25	19	1-3	55	63	50		
WINDLASS										
WINCHES, FORWARD										
Trolley hoist	1	1	16	19	1-04	41	49	27		
WINCHES, AFT										
STEERING GEAR—										
(a) MOTOR GENERATOR	2	2	150	61	1-77	320	2 x 205	63		
(b) MAIN MOTOR	2	2	150	61	1-77	63	2 x 205	48		
WORKSHOP MOTOR										
2 VENTILATING FANS F.R.	2	1	2-5	1	1-78	24	16	47		
Lathe I	1	1	16	19	1-04	40	49	12		
Shaping machine	1	1	4	19	-52	14	22	10		
Lathe II	1	1	2-5	1	1-78	12	16	8		
Drilling machine	1	1	4	19	-52	14	22	8		
2 Ventilating Fans	2	1	2-5	1	1-78	8-5	16	47		
2 Boiler Fans	2	1	16	19	1-04	24	49	60 - 50		
Grinding Stone	1	1	2-5	1	1-78	8	16	12		

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
GERMANIAWERKE
Aktiengesellschaft

Electrical Engineers.

Date

COMPASSES.

Distance between electric generators or motors and standard compass 70 m

Distance between electric generators or motors and steering compass 75 m

The nearest cables to the compasses are as follows:—

A cable carrying 5 Ampères close to feet from standard compass 5 close to 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 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
GERMANIAWERKE
Aktiengesellschaft

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.)

This electric installation has been fitted in accordance with the approved plans and instructions thereto and in compliance with the Society's Rules. (For exceptions please see London Letter E, 11/11/37 addressed to the Builders.) Materials and workmanship are of good quality and the outfit is ample. It has given satisfaction under working conditions and was found in order.

Noted

all

28/1/38

Total Capacity of Generators 270 Kilowatts.

The amount of Fee ... R.Ms £ 920.-

When applied for,

22.1.38

When received,

17/2/38

Travelling Expenses (if any) £

PA. Whitfield
Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI 4 FEB 1938

Assigned See other F.B. report