

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

JUL 28 1937

Received at London Office

Date of writing Report 23rd July 1937 When handed in at Local Office

Port of BREMEN

No. in Survey held at WESERMÜNDE

Date, First Survey 18th May 37 Last Survey 21st July 1937

Reg. Book.

(Number of Visits 15)

90466 on the Single Sc. Vessel

TAKORADIAN

Tons { Gross 5452
Net 3106

Built at WESERMÜNDE

By whom built DESCHIMAG WERK: SEEBECK Yard No. 572 When built 1937

Owners ELMINA CO LTD. ACCRA.

Port belonging to FREETOWN

Electric Light Installation fitted by ALLGEMEINE ELECTRICITÄTS GESELLSCHAFT Contract No. 47500 When fitted 1937

Is the Vessel fitted for carrying Petroleum in bulk NO

System of Distribution TWO WIRE SYSTEM

Pressure of supply for Lighting 220 volts, Heating no heaters installed volts, Power 220 volts.

Direct or Alternating Current, Lighting Direct Current ✓ Power Direct Current ✓

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, the 110 kw generator is an adjustable regulating resistance fitted in series with each shunt field

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 ✓

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, starboard 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, starboard side on elevated platform ✓

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 marble, tested 2000 volts 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

For each 110 KW Generator an automatic circuit breaker with no voltage and reversed current trip. For the 25 KW Generator and each outgoing circuit a double pole linked switch and a fuse on each pole

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 6 ammeters 4

voltage meters - 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

1 Ohmmeter ✓ 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 *yes* are the cables insulated and protected as per Tables IV, V, X or XI of the Rules *German Standards*

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 *about 3%* 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 *no paper insulated cables* 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 *supported by steel iron cable leads, and protected partly in tubes, partly by steel iron plating*

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 *lead covered cables* 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 *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 *wood or 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 *none*

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 *none*

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 *none* 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 *none*, are air heaters constructed and fitted as per Rule *none*

Searchlight Lamps, No. of *none*, whether fixed or portable *are their fittings as per Rule*

Are Lamps, other than searchlight lamps, No. of *none*, 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 & vertically* 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 *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 *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 *are all fuses of the fitted cartridge 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 *are all fuses of the fitted cartridge type*

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.	Amperes.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.		
MAIN ...	3	110	230	480	430	Heavy Oil Engines	Prime Oil	above 150°F		
AUXILIARY ...	1	25	230	110	500	" " "	" "	" "		
EMERGENCY ...										
ROTARY TRANSFORMER										
GENERATOR, LIGHTING AND HEATING CONDUCTORS.										
DESCRIPTION.	No. of Poles.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.				
MAIN GENERATOR ...	2	2 x 185	61	1.97	478	464	25	10	RUBBER	Lead covered and braided.
EQUALISER CONNECTIONS ...	1	185	61	1.97	-	232	25	10	"	"
AUXILIARY GENERATOR ...	1	70	37	1.55	109	125	30	10	"	"
EMERGENCY GENERATOR										
ROTARY TRANSFORMER										
ENGINE ROOM - BRIDGE DECK I	1	4	19	0.52	3.5	22	10	10	"	"
ENGINE ROOM - BRIDGE DECK II	1	4	19	0.52	2.1	22	150	150	"	"
ENGINE ROOM - BRIDGE DECK III	1	71	37	1.55	150	150	80	80	"	"
AUXILIARY SWITCHBOARDS	1	4	19	0.52	9	22	200+60	200	"	"
AFT SHIP IV	1	240	91	1.84	350	342	200	200	"	"
AFT SHIP V	1	6	19	0.64	10	30	16+60	16	"	"
AFT SHIP VI & VII	1	6	19	0.64	10	30	80	80	"	"
AFT SHIP VIII & IX	1	240	91	1.84	300	292	200	200	"	"
ACCOMMODATION X	1	240	91	1.84	220	225	80	80	"	"
ENGINE ROOM XI	1	16	19	1.04	40	50	80	80	"	"
" XII	1	6	19	0.64	28	30	30	30	"	"
" XIII	1	150	61	1.77	200	205	40	40	"	"
" XIV	1	95	37	1.81	136	150	80	80	"	"
" XV & XVI	1	95	37	1.81	24	150	14	14	"	"
WIRELESS XVII	1	16	19	1.04	30	50	160	160	"	"
SEARCHLIGHT XVIII	1	1.5	1	1.38	0.3	9	120	120	"	"
MASTHEAD LIGHT XIX	1	1.5	1	1.38	0.1	9	6	6	"	"
SIDE LIGHTS XX	1	1.5	1	1.38	0.3	9	200	200	"	"
COMPASS LIGHTS XXI	1	2.5	1	1.78	1	15	4	4	"	"
POOP LIGHTS XXII										
CARGO LIGHTS XXIII										
ARC LAMPS XXIV										
HEATERS XXV										
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 ...	1	1	50	19	1.83	100	100	16	RUBBER	Lead covered and braided.
MAIN BILGE LINE PUMPS ...	1	1	10	19	0.82	38	38	16	"	"
GENERAL SERVICE PUMP ...	1	1	25	19	1.3	60	62	18	"	"
EMERGENCY BILGE PUMP ...	1	1	10	19	0.82	38	38	16	"	"
SANITARY PUMP ...	1	1	4	19	0.52	18	22	20	"	"
3 CIRC. SEA WATER PUMPS ...	3	1	50	19	1.83	100	100	40	"	"
PALM OIL PUMP	1	1	95	37	1.81	140	150	28	"	"
DRINKING WATER PUMP	1	1	1.5	1	1.38	4	9	30	"	"
DRINKING WATER PUMP	1	1	2.5	1	1.78	6	15	12	"	"
2 ENGINE TURNING GEAR ...	2	1	2.5	1	1.78	12	15	16	"	"
PROP. SHAFT TURNING GEAR	1	1	6	19	0.64	20	30	12	"	"
4 LUBRICATING OIL PUMPS ...	4	1	50	19	1.83	85	100	20	"	"
OIL FUEL TRANSFER PUMP ...	1	1	25	19	1.30	55	62	30	"	"
WINDLASS ...	1	1	240	91	1.84	220	275	80	"	"
6 WINCHES, FORWARD ...	6	1	35	19	1.53	100	85	14	"	"
2 " MIDSHIPS ...	2	1	35	19	1.53	100	85	14	"	"
6 WINCHES, AFT ...	6	1	35	19	1.53	100	85	14	"	"
1 WARPING WINCH	1	1	35	19	1.53	100	85	40	"	"
STEERING GEAR -										
(a) MOTOR GENERATOR ...	1	1	35	19	1.53	50	80	180	"	"
(b) MAIN MOTOR ...	1	1	35	19	1.53	50	80	8	"	"
DRILL MACHINE	1	1	15	1	1.38	4	9	6	"	"
WORKSHOP MOTOR	1	1	15	1	1.38	6	9	6	"	"
" GRINDING	1	1	4	19	0.52	16	22	8	"	"
" LATHE	1	1	4	19	0.52	16	22	20	"	"
4 VENTILATING FANS ...	4	1	1.5	1	1.38	2	9	20	"	"
LUBR. OIL SEPARATOR	1	1	4	19	0.52	16	22	16	"	"
FUEL " "	1	1	4	19	0.52	16	22	16	"	"
SPARE FIRE PUMP	1	1	10	19	0.82	35	38	14	"	"
REFR. COMPRESSOR	1	1	10	19	0.82	36	38	6	"	"
" COOLING W. PUMP	1	1	15	1	1.38	4	9	22	"	"
SPARE COOLING W. " "	1	1	4	19	0.52	18	22	20	"	"
LA MONT SYSTEM	1	1	4	19	0.52	16	22	16	"	"
BOILER BLOWER	1	1	2.5	1	1.78	10	15	10	"	"

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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.

ALLGEMEINE ELEKTRICITÄTS-GESELLSCHAFT

ABTEILUNG SCHIFFBAU

HAUPTSTADT BREMEN

Electrical Engineers.

Date 22. 7. 27

COMPASSES.

Distance between electric generators or motors and standard compass 60 feet

Distance between electric generators or motors and steering compass 65 "

The nearest cables to the compasses are as follows:—

A cable carrying 0.2 Ampères 6 feet from standard compass 10 feet from steering compass.

A cable carrying 0.2 Ampères 10 feet from standard compass 10 feet from steering compass.

A cable carrying 0.1 Ampères close to feet from standard compass close to 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 *all* course in the case of the standard

compass, and *nil* degrees on *all* course in the case of the steering compass.

DEUTSCHE SCHIFF UND MASCHINENBAU A.G.

approved

Builder's Signature.

Date 21. 7. 26

Is this installation a duplicate of a previous case *yes* If so, state name of vessel *GAMBIAN*

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

been fitted in accordance with the approved plans, the Puntarg's letters and in conformity with the requirements of the Rules.

The materials used in the construction and the workmanship are of good quality. Regarding conductors the German Standards have been applied generally. Heaters as indicated in plans have not been fitted. The whole installation has been tested under working condition and found satisfactory in all respects.

Noted

YRM

4.8.37

Total Capacity of Generators 355 Kilowatts.

The amount of Fee ... RM 1005, : When applied for, 22. 7. 1927

Travelling Expenses (if any) *£* : When received, 14. 8. 1937 *£* 14.8

A. Carstensen
Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI 6 AUG 1937

Assigned *See above F.E. rpt.*



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