

# REPORT ON ELECTRIC FITTINGS

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

28 APR 1930

Date of writing Report 16 April 1930 When handed in at Local Office 22 April 1930 Port of Copenhagen Received at London Office.....

No. in Survey held at Copenhagen Date, First Survey 27 January Last Survey 15 April 1930  
Reg. Book. 39518 on the Steel Twin Screw Motor Vessel BORINGIA (Number of Visits.....18)

Built at Copenhagen By whom built Mester og Skibsbyggeri Yard No. 560 When built 1930  
Owners M/s Det Estariatiske Kompagni Port belonging to Copenhagen

Electric Light Installation fitted by M/s Bernice & Wain's Mester og Skibsbyggeri Contract No. \_\_\_\_\_ When fitted 1930

Is the Vessel fitted for carrying Petroleum in bulk No

System of Distribution Two conductor insulated system.

Pressure of supply for Lighting 110 volts, Heating 220 volts, Power 220 volts.

Direct or Alternating Current, Lighting direct current Power direct current except for oil purifiers

If alternating current system, state frequency of periods per second alternating current system for oil purifiers. 112 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 rating yes, are they compound wound yes,  
are they over compounded 5 per cent. 0 per cent., 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

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 the machinery space, 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 in the machinery space  
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 \_\_\_\_\_ 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, 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,  
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, proportion of omnibus bars yes, individual fuses to voltmeter, pilot or earth lamp yes, connections of switches yes.

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches

For each generator: A three pole combined overload and reverse current circuit breaker

For each outgoing circuit: A double pole switch and a double pole fuse

Instruments on main switchboard 7 ammeters 5 voltmeters \_\_\_\_\_ synchronising device for paralleling purposes.

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system One Voltmeter for 220 Volts and one Voltmeter for 110 Volts provided with Ohm scale. The board is provided with 2 sets of earth testing lamps

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules yes

Joint Boxes Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule yes



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Cables: Single, twin, concentric, or multicore *single and twin* are the cables insulated and protected as per Tables IV or V of the Rules *Tables*.

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load *about 5 Volts*.

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

Paper Insulated Cables. If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *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*.

Support and Protection of Cables, state how the cables are supported and protected *The cables are supported by screwed clips and where necessary protected by steel wire screens or non tubes. Steel wire armoured cables used*

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, if lights are fitted, are the cables and fittings in accordance with the special requirements *yes*

Joints in Cables, state if any, and how made, insulated, and protected *No joints in cables*

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 *No earthing connections*

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 *No*

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected *No*

how are the cables led *yes*

where are the controlling switches situated *yes*

Searchlight Lamps, No. of *1*, whether fixed or portable *portable*, are their fittings as per Rule *yes*

Arc Lamps, other than searchlight lamps, No. of *0*, 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*

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

*No. of lamps* *not* of this type, state distance of the combustible material horizontally or vertically above the motors *yes* and *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 *yes*

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office *yes*

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Rev. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	90	220	410	360	Auxiliary Diesel engine	Crude oil	Above 150° F
AUXILIARY	1	60	220	273	360	" " " "	" " " "	" " " "
EMERGENCY								
ROTARY TRANSFORMER	2	20	110	182	1500	Glebo-motor		

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 Effective Area per Pole Sq. ins. $\frac{1}{4}$	No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATOR	2	2 x 150	37	2.27	410	2 x 205	31 - 44	Vulcanized	Lead covered and
EQUALISER CONNECTIONS	1	150	37	2.27		20.5	16.5 - 22	rubber	Steel wire armoured
AUXILIARY GENERATOR	2	2 x 95	19	2.52	273	2 x 148	55	"	"
EMERGENCY GENERATOR									
ROTARY TRANSFORMER MOTOR	1	70	19	2.16	105	124	16	"	"
TRANSFORMER GENERATOR	1	120	37	2.03	173	177	18	"	"
ENGINE ROOM	1	6	7	1.05	28	28.6	4	"	"
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
NAVIGATION	1	2.5	7	0.67	3.75	15.5	104	"	"
SALOONS AND CAPTAIN	1	16	7	1.7	30.0	49	94	"	"
PASSENGERS	1	25	7	2.13	54.0	63	78	"	"
OFFICERS	1	16	7	1.7	48.0	49	82	"	"
DECK AND HOLDS FORWARD	1	6	7	1.05	16.5	28.6	120	"	"
ACCOMMODATION AFT	1	6	7	1.05	23.0	28.6	158	"	"
DECK AND HOLDS AFT	1	6	7	1.05	15.0	28.6	120	"	"
HEATERS: CAPTAIN	1	16	7	1.70	42.0	49	106	"	"
" SALOONS	1	50	19	1.83	66.0	98	96	"	"
" PASSENGERS	1	120	37	2.03	148	177	70	"	"
WIRELESS	1	10	7	1.35	20	38	70	"	"
SEARCHLIGHT	1	16	7	1.70	40	49	10	"	"
MASTHEAD LIGHT	1	1.5	1	1.38	0.36	10	100	"	Lead covered and
" MARIN	1	1.5	1	1.38	0.36	10	82	"	armoured with steel
SIDE LIGHTS	1	1.5	1	1.38	0.36	10	25	"	armoured with steel
COMPASS LIGHTS	1	1.5	1	1.38	0.14	10	15	"	tape and braided
POOP LIGHTS	1	1.5	1	1.38	0.23	10	210	"	"
CARGO LIGHTS	1	1.5	48	0.20	1.37	10	40	"	flexible and braided
ARC LAMPS	1	1.5	7	1.38	2.3	10	40	"	Lead covered and
HEATERS	1	2.5	7	0.67	11.4	15	50	"	armoured with steel tape and braided

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 Effective Area per Pole Sq. ins. $\frac{1}{4}$	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	1	25	7	2.13	51	63	60	Vulcanized	Lead covered and
MAIN BILGE LINE PUMPS									rubber	armoured with
GENERAL SERVICE PUMP	1	1	4	7	0.85	10	22	20	"	galvanized steel wire
EMERGENCY BILGE PUMP	1	1	4	7	0.85	10	22	20	"	"
SANITARY PUMP	1	1	10	7	1.35	31	38	56	"	"
CIRC. SEA WATER PUMPS	2	1	70	19	2.16	102	124	14	"	"
CIRC. FRESH WATER PUMPS	1	1	2.5	7	0.67	7	15	10	"	"
AIR COMPRESSOR	1	1	2.5	7	0.67	7	15	10	"	"
FRESH WATER PUMP	1	1	2.5	7	0.67	7	15	10	"	"
ENGINE TURNING GEAR	2	1	10.0	7	1.35	28	38	10 - 28	"	"
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS	2	1	70	19	2.16	102	124	12 - 25	"	"
OIL FUEL TRANSFER PUMP	1	1	25	7	2.13	51	63	38	"	"
WINDLASS AND WINCHES	4	1	185	37	2.52	315	340	126	"	"
WINCHES, FORWARD	3	1	185	37	2.52	315	340	126	"	"
" MIDSHIP	2	1	95	19	2.52	170	185	37	"	"
WINCHES, AFT	3	1	150	37	2.27	255	285	124	"	"
" SWAPPING	4	1	150	37	2.27	255	285	124	"	"
STEERING GEAR										
(a) MOTOR GENERATOR	1	1	35	19	1.53	48	78	164	"	"
(b) MAIN MOTOR	1	1	1.5	7	1.38	4	10	25	"	"
WORKSHOP MOTOR	1	1	2.5	7	0.67	7	15	20	"	"
VENTILATING FANS	5	1	25	7	2.13	40	63	37	"	"
SUPERCHARGING BLOWERS	2	1	150	37	2.27	190	205	25	"	"
LAUNDRY	3	1	50	19	1.83	100	100	128	"	"
PURIFIERS & OIL HEATER	3	1	35	19	1.53	78	78	88	"	"
REFRIGERATING MACH. FREEZING	1	1	16	7	1.70	33	49	40	"	"
" " " " " " " "	1	1	4	7	0.85	12	22	10	"	"
CARGO AND PROVISION	1	1	6	7	1.05	21	28.6	10	"	"

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