

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

MAY 16 1938

Date of writing Report 30/4/1938 When handed in at Local Office 13/5/1938 Port of Oslo  
 No. in Survey held at Fredrikstad Date, First Survey 6/4/38 Last Survey 3/5 - 1938  
 Reg. Book. on the steel screw steamer "VIVA" (Number of Visits.....7)  
 Built at Fredrikstad By whom built Fredrikstad Mek. Verksted Yard No. 287 When built 1938  
 Owners C. H. Sørensen & Sønner Port belonging to Arendal  
 Electric Light Installation fitted by M. Fredrikstad Mek. Verksted Contract No. When fitted 1938  
 Is the Vessel fitted for carrying Petroleum in bulk no.

System of Distribution direct current constant pressure, two wire system.  
 Pressure of supply for Lighting 110 volts, Heating ✓ volts, Power 110 volts.  
 Direct or Alternating Current, Lighting direct Power ✓  
 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 ✓ Have certificates of test results for machines under 100 kw. been submitted and approved not yet received Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing ✓  
 Have certificates for generators under 100 kw. been supplied and approved not yet received  
 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 engine room, S.B. 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 in engine room, at fore bulkhead, S.B. 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 yes, 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 double pole switches for each outgoing circuit  
 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 two ammeters two  
 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 change over switch for + and -, and direct indicating 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* are all fuses labelled as per rule *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 *twin* are the cables insulated and protected as per Rules IV, V, X, XI, XII or XIII 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 mts*

**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 *Yes*, or waterproof insulating tape *✓*

**Cable Runs,** are the cables sized 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 laid under machines or floorplates *no* if so, are they adequately protected *✓*

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 *in pipe fittings and clips*

If cables are run in wood casings, are the casings and caps secured by screws *✓*, are the cap screws of brass *✓*, 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 *H.T. metal boxes with porcelain jointing*

**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 *in all jointing boxes, all cables are earthed, 10.3 mm<sup>2</sup> red area* are their connections made as per Rule *Yes*

**Alternative Lighting,** are the groups of lights in the propelling machinery space arranged as per Rule *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 *✓* are they ventilated 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 *Yes; cables run in steel casings* 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

where are the controlling switches situated *✓* are all fittings suitably ventilated *✓* are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials *✓*

**Heating and Cooking Appliances,** are they constructed and fitted as per Rule *✓* are air heaters constructed and fitted as per Rule *✓*

**Searchlight Lamps, No. of** *✓* whether fixed or portable *✓* 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 *totally enclosed* 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 *✓* have certificates for all motors for essential services been supplied and approved *✓*

**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 flameproof type approved for use in dangerous spaces *✓* **Spare Gear,** if the vessel is for open sea service have spares been supplied as per Rule *✓* are they suitably stored in dry situations *✓*

# PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT			DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	1	10	110	91	475	Steam engine	
AUXILIARY	1	4.5	115	32	1200	Lister oil engine	Solar oil.
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	50 mm <sup>2</sup>	12	2.3	91	160	13	Rubber	Iron armouring
EQUALISER CONNECTIONS	1	25"	7	2.17	32	100	13	Rubber	"
AUXILIARY GENERATOR									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER / MOTOR									
ENGINE ROOM	1	1.5"	1	1.4	10	14	30	Rubber	"
BOILER ROOM	1	1.5"	1	1.4	10	14	30	Rubber	"
AUXILIARY SWITCHBOARDS	1	2.5	1	1.82	11	25	6.20	Rubber	Iron arm.
Reg. switch fore mast	1	2.5	1	1.82	11	20	5.5	"	"
Head	1	2.5	1	1.82	11	20	6.0	"	"
Aft									
ACCOMMODATION									
Saloon	1	16 mm <sup>2</sup>	7	1.72	15	75	36	Rubber	Iron armouring
Officers	1	6"	4	1.38	12	31	33	Rubber	"
Crew	1	10"	7	1.35	15	43	109	Rubber	"
WIRELESS	1	25	7	2.17	21	100	52	Rubber	Iron armouring
SEARCHLIGHT	1	2.5	1	1.82	0.3	20	167 - 140	"	"
MASTHEAD LIGHT	1	1.5	1	1.4	0.3	14	30 - 24	"	"
SIDE LIGHTS	1	1.5	1	1.4	0.3	14	18	"	"
COMPASS LIGHTS	1	2.5	1	1.82	0.3	20	164	"	"
POOP LIGHTS	1	2.5	1	1.82	0.3	20	73 - 73 - 128	"	"
CARGO LIGHTS									
HEATERS									

## 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										
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										
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										
VENTILATING FANS										
Lattice motor	1		6	1	1.38	25	25	50	Rubber	Iron armouring



The Electrical Equipment is installed in accordance with the approved plans.  
All Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.  
The foregoing is a correct description.

*J. Quayle*

Electrical Engineers.

Date *28<sup>th</sup> April 1938.*

#### COMPASSES.

Minimum distance between electric generators or motors and standard compass *5.5 m.*

Minimum distance between electric generators or motors and steering compass *2.1 m.*

The nearest cables to the compasses are as follows:—

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

The maximum deviation due to electric currents was found to be *nil* degrees on ..... course in the case of the standard compass, and ..... degrees on ..... course in the case of the steering compass.

*1/2 Fredriksstad mek. Verksted*

*[Signature]*

Builder's Signature.

Date *10/5/38*

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, etc.)

The electric installation on this vessel has been examined during the fitting up of the generators, cables and switchboards. The materials employed appear to be good, and the workmanship is good. - The installation was carried out in accordance with the approved plans and the Secretary's letter in connection therewith. The complete installation was tested as required by the Rules and found satisfactory. With reference to the dynamo test sheets the builders had not yet received same, but same will be forwarded immediately on receipt.

It is recommended that this installation be classed in the Society's Register Book.

*Noted  
L4  
17/6/38.*

Total Capacity of Generators *14.5* Kilowatts.

The amount of Fee ...

*£1,288.55*

When applied for, *13/5/38*

Travelling Expenses (if any)

*£ entered on bill of exchange*

When received, *9.6.38*

*£11.6*

*Runde*

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

*FRI. 24 JUN 1938*

Assigned

*See Osl. J.E. 5097*



© 2019

Lloyd's Register Foundation