

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

OCT - 9 1937

Date of writing Report 4th October 37 When handed in at Local Office 10 Port of Copenhagen
 No. in Survey held at Akershus Date, First Survey 25th August Last Survey 28th September 1937
 Reg. Book. Single Screw Vessel "ALEX VAN OPSTAL" Tons { Gross 5965.14
 Net 3446.93
 Built at Akershus By whom built As Akershus Skibsvaerkstard No. 80 When built 1937
 Owners Compagnie Maritime Belge (Royal) Soc. Anonyme Port belonging to Antwerp
 Electric Light Installation fitted by The ship builders Contract No. - When fitted 1937
 Is the Vessel fitted for carrying Petroleum in bulk no

System of Distribution 2 conductor insulated systems
 Pressure of supply for Lighting 220 volts, Heating 220 volts, Power 220 volts.
 Direct or Alternating Current, Lighting Direct Power Direct

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, is an adjustable regulating resistance fitted in series with each shunt field yes
 approved herewith Have certificates of test results for machines under 100 kw. been submitted and approved yes
 Have certificates for generators under 100 kw. been supplied and approved none

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 engine room, port side, from level, 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 no woodwork etc.
 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 on a platform in the forward end of the engine room
 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 no woodwork etc.
 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
 For generator: A 3 pole circuit breaker with overload & reversed current trips
 Outgoing circuits: A 2 pole switch with fuses 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 3
 voltmeters - 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
One voltmeter with ohm scale
 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

W 467-0143 (1/2)



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 *single* are the cables insulated and protected as per Tables 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 *about 5 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 *-*, 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 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 *lead covered & steel wire armoured cables used lead on steel plates and secured by steel 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 *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 *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 *-*

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 *lamps in holds, placed between deck beams, protected by glass bulbs & steel grids* 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 *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 *-* are air heaters constructed and fitted as per Rule *-*

Searchlight Lamps, No. of *none* 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 *no wood work etc.* 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 *none* have certificates for all motors for essential services been supplied and approved *herewith* **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 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 *yes* 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. | Amperes. | Revs. per Min. | | Fuel Used. | Flash Point of Fuel. |
| MAIN ... | 3 | 165 | 220 | 750 | 400/320 | 4 cyl. 250 S.A. Diesel engine | Coal oil | about 150° F. |
| AUXILIARY ... | | | | | | | | |
| 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 Sq. mm. | No. | Diameter. | In Circuit. | Rule. | | | | |
| MAIN GENERATOR ... | 2 | 400 | 91 | 2.36 | 750 | 780 | 17-18-27 | India rubber | Lead covered & | |
| EQUALISER CONNECTIONS | 1 | 400 | 91 | 2.36 | - | 390 | 8.5-9-13.5 | - | Wire armoured | |
| WINDING GENERATOR | 1 | 240 | 61 | 2.24 | 215 | 272 | 48 | - | - | |
| WINDING GENERATOR | 1 | 240 | 61 | 2.24 | 400 | 420 | 98 | - | - | |
| WINDING GENERATOR | 1 | 185 | 37 | 2.52 | 335 | 337 | 28 | - | - | |
| WINDING GENERATOR | 1 | 185 | 37 | 2.52 | 335 | 337 | 102 | - | - | |
| ENGINE ROOM ... | 1 | 10 | 7 | 1.35 | 30 | 38 | 34 | - | - | |
| ENGINE ROOM ... | 1 | 400 | 91 | 2.36 | 282 | 390 | 32 | - | - | |
| ENGINE ROOM ... | 1 | 10 | 7 | 1.35 | 32 | 38 | 40 | - | - | |
| AUXILIARY SWITCHBOARDS | 1 | 120 | 37 | 2.03 | 170 | 177 | 40 | - | - | |
| Light switchboard | 1 | 16 | 7 | 1.7 | 42 | 49 | 40 | - | - | |
| Papiermilling chiller | 1 | 95 | 19 | 2.53 | 124 | 152 | 44 | - | - | |
| Work shop | 1 | 10 | 7 | 1.35 | 26 | 38 | 46 | - | - | |
| Pump in Oil Water | 1 | 240 | 61 | 2.24 | 224 | 272 | 90 | - | - | |
| ACCOMMODATION SALOON | 1 | 35 | 19 | 1.53 | 60 | 77 | 52 | - | - | |
| apt | 1 | 10 | 7 | 1.35 | 15 | 38 | 60 | - | - | |
| Charlton | 1 | 2.5 | 7 | 0.67 | 4 | 16 | 82 | - | - | |
| Galley | 1 | 2.5 | 7 | 0.67 | 10 | 16 | 26 | - | - | |
| Partry | 1 | 2.5 | 7 | 0.67 | 10 | 16 | 52 | - | - | |
| WIRELESS | 1 | 10 | 7 | 1.35 | 20 | 38 | 60 | - | - | |
| SEARCHLIGHT | 1 | 1.5 | 1 | 1.38 | 0.18 | 9 | 132 | - | - | |
| MASTHEAD LIGHT | 1 | 1.5 | 1 | 1.38 | 0.18 | 9 | 26 | - | - | |
| SIDE LIGHTS | 1 | 1.5 | 1 | 1.38 | 0.18 | 9 | 8 | - | - | |
| COMPASS LIGHTS | 1 | 1.5 | 1 | 1.38 | 0.11 | 9 | 180 | - | - | |
| POOP LIGHTS | 1 | 1.5 | 1 | 1.38 | 2.2 | 9 | 18 | - | - | |
| CARGO LIGHTS | 1 | 50 | 19 | 1.83 | 91 | 98 | 12 | - | - | |
| HEATERS | 1 | 50 | 19 | 1.83 | 91 | 98 | 12 | - | - | |

MOTOR CONDUCTORS.

| DESCRIPTION. | No. of Motors. | CONDUCTORS. | | COMPOSITION OF STRAND. | | TOTAL MAXIMUM CURRENT AMPERES. | | Approximate Length. (Lead and Return.) Feet. | Insulated with | HOW PROTECTED. |
|-------------------------|----------------|--------------------------------|-----|------------------------|-------------|--------------------------------|-----|--|----------------|----------------|
| | | Total Nominal Area per Sq. mm. | No. | Diameter. | In Circuit. | Rule. | | | | |
| BALLAST PUMP | 1 | 1 | 95 | 19 | 2.53 | 127 | 152 | 12 | India rubber | Lead covered & |
| MAIN BILGE LINE PUMPS | 1 | 1 | 95 | 19 | 2.53 | 127 | 152 | 4 | India rubber | Lead covered & |
| GENERAL SERVICE PUMP | | | | | | | | | | |
| EMERGENCY BILGE PUMP | | | | | | | | | | |
| SANITARY PUMP | | | | | | | | | | |
| CIRC. SEA WATER PUMPS | 2 | 1 | 95 | 19 | 2.53 | 130 | 152 | 5 | - | - |
| CIRC. FRESH WATER PUMPS | 1 | 1 | 95 | 19 | 2.53 | 130 | 152 | 5 | - | - |
| AIR COMPRESSOR | 1 | 1 | 4 | 7 | 0.85 | 18.7 | 22 | 16 | - | - |
| FRESH WATER PUMP | 1 | 1 | 16 | 7 | 1.7 | 48 | 49 | 43 | - | - |
| ENGINE TURNING GEAR | | | | | | | | | | |
| ENGINE REVERSING GEAR | 2 | 1 | 150 | 37 | 2.27 | 183 | 206 | 52 | - | - |
| LUBRICATING OIL PUMPS | 1 | 1 | 25 | 7 | 2.13 | 60 | 65 | 43 | - | - |
| OIL FUEL TRANSFER PUMP | 1 | 1 | 150 | 37 | 2.27 | 235 | 280 | 66 | - | - |
| WINDLASS | 1 | 1 | 70 | 19 | 2.16 | 133 | 147 | 8 | - | - |
| WINCHES, FORWARD | 6 | 1 | 70 | 19 | 2.16 | 125 | 147 | 30 | - | - |
| - MIDSHIP | 4 | 1 | 70 | 19 | 2.16 | 125 | 147 | 30 | - | - |
| WINCHES, AFT | 5 | 1 | 70 | 19 | 2.16 | 125 | 147 | 8 | - | - |
| STEERING GEAR- | | | | | | | | | | |
| (a) MOTOR GENERATOR | 1 | 1 | 120 | 37 | 2.03 | 170 | 177 | 128 | - | - |
| (b) MAIN MOTOR | 4 | 1 | 25 | 7 | 0.67 | 8 | 16 | 8 | - | - |
| WORKSHOP MOTOR | 8 | 1 | 25 | 7 | 0.67 | 8 | 16 | 24 | - | - |
| VENTILATING FANS | 3 | 1 | 2.5 | 7 | 0.67 | 12 | 16 | 6 | - | - |
| Oil pump fans | 2 | 1 | 2.5 | 7 | 0.67 | 6.7 | 16 | 6 | - | - |
| Boiler pumps | 2 | 1 | 2.5 | 7 | 0.67 | 8 | 16 | 108 | - | - |
| Boiler fans | 2 | 1 | 2.5 | 7 | 0.67 | 8 | 16 | 18 | - | - |
| Engine room fans | 1 | 1 | 4 | 7 | 0.85 | 16 | 22 | 18 | - | - |

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.

AKTIESELSKABET
NAKSKOV SKIBSVÆRFT

Electrical Engineers.

Date

COMPASSES.

Minimum distance between electric generators or motors and standard compass 10 m from wireless generator

Minimum distance between electric generators or motors and steering compass 10 " " " "

The nearest cables to the compasses are as follows:— magnetic system

A cable carrying 0.1 Ampères 6" feet from standard compass and 10 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 0 degrees on any course in the case of the standard compass, and 0 degrees on any course in the case of the steering compass.

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. The electric installation as)

described herein has been constructed and fitted under special survey in accordance with the Rules, the approved plans and the requirements contained in the Secretary's letter E dated 10/11 & 30/11-1936

The material used in construction is of good description and the workmanship is good.

On completion the whole installation was tested under full power working conditions - found satisfactory.

W. J. L. J.
11/10/37

Total Capacity of Generators 495 Kilowatts.

The amount of Fee ... £ 1282.40 When applied for 8.10.1937

Travelling Expenses (if any) £ 1.11.1937

J. P. Langkilde Jensen
Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 12 OCT 1937

Assigned See also F. E. report

2m. 12. 36.—Transfer. The Surveyors are requested not to write on or below the space for Committee's Minute

