

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

OCT 14 1938

Date of writing Report 23 Sept 1938 When handed in at Local Office 9th Oct 1938 Port of Dantzig  
 No. in Survey held at Dantzig Date, First Survey 4 July Last Survey 14 Sept 1938  
 Reg. Book. 87015 on the TWIN SCREW M.V. "ARENDSKERK" (Number of Visits 24)  
 Tons { Gross 7889  
 Net 4753  
 Built at Dantzig By whom built F. Schichau G.m.b.H. Yard No. 1391 When built 1938  
 Owners Vereinigte hollandsche Scheep Maats Port belonging to The Hague  
 Electric Light Installation fitted by F. Schichau G.m.b.H. Contract No. ✓ When fitted 1938  
 Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Two line System.  
 Pressure of supply for Lighting 220 volts, Heating 220 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, 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.  
 Have certificates for generators under 100 kw. been supplied and approved 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 2 on Port side, 1 on Starboard side Engine room bottom platform, 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 End of Engine room on middle 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 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 as approved, 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  
 A double pole overload circuit breaker, with single pole equalizing switches, pole switch + 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 10 ammeters 5  
 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  
 Yes Voltmeters 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



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 yes 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 yes **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load 3.5 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**, 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 yes

**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 yes

Are cables in machinery spaces, galleys, lavatories, bathrooms and lavatories lead covered or run in conduit yes Lead covered by clips and where exposed to damage by sheet iron plates

**Support and Protection of Cables**, state how the cables are supported and protected yes are the cables 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**, 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 yes 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 are they ventilated 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 yes

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected yes how are the cables led yes

where are the controlling switches situated yes 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 are their fittings as per Rule yes Portable are the coils self-contained and readily removable for replacement yes

**Searchlight Lamps**, No. of 1 whether fixed or portable yes are the motors placed in well-ventilated compartments in which are the brushes, brush holders, terminals and lubricating arrangements as per Rule yes are they protected from mechanical injury and damage from inflammable gases cannot accumulate and clear of all inflammable material 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 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 have certificates for all motors for essential services been supplied and approved 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 are all fuses of the filled 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 flameproof type approved for use in dangerous spaces yes are they suitably stored in dry situations 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.	Amperes.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.	
MAIN	3	180	230	782	360	Diesel Engine.	Diesel oil	above 150°F.	
AUXILIARY	1	30	230	130	750	"	"	"	
EMERGENCY									
ACCUMULATOR	1	229 A/h	220	46					
ROTARY TRANSFORMER									

GENERATOR, LIGHTING AND HEATING CONDUCTORS.									
DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		Approximate Length. (Lead and Return.) Feet. <i>ft.</i>	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole Sq. Ins. <i>sq. ins.</i>	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR	2	485	91	2.60	782	922	45	Rubber	Lead covered and rammed.
EQUALISER CONNECTIONS	2	485	91	2.60			23	"	"
AUXILIARY GENERATOR	1	97	37	1.85	130	152	35	"	"
EMERGENCY GENERATOR									
ROTARY TRANSFORMER									
MOTOR GENERATOR	1	1.3	3	0.75	1	7.8			
ENGINE ROOM									
BOILER ROOM									
AUXILIARY SWITCHBOARDS	1	48.5	19	1.85	75	97	25	"	"
GALLEY.	1	25.8	19	1.30	58	64	60	"	"
ACCOMMODATION ROOM	1	6.45	7	1.10	23	31	160	"	"
FORECASTLE.	1	4.5	7	0.90	18	24	170	"	"
BRIDGE HOUSE.	1	4.5	7	0.90	8	24	40	"	"
PASSENGERS.	1	14.5	7	1.60	39	46	90	"	"
OFFICERS (PORT)	1	6.45	7	1.10	22	31	40	"	"
OFFICERS (STB)	1	6.45	7	1.10	20	31	40	"	"
WIRELESS	1	14.50	7	1.60	40	46	44	"	"
SEARCHLIGHT	1	1.3	3	0.75	1	7.8	120	"	"
MASTHEAD LIGHT	1	1.3	3	0.75	1	7.8	10	"	"
SIDE LIGHTS	1	1.3	3	0.75	0.5	7.8	6	"	"
COMPASS LIGHTS	1	1.3	3	0.75	1	7.8	130	"	"
POOP LIGHTS	1	1.3	3	0.75	1	7.8	70	"	"
CARGO LIGHTS									
HEATERS									

MOTOR CONDUCTORS.										
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		Approximate Length. (Lead and Return.) Feet. <i>ft.</i>	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Nominal Area per Pole Sq. Ins. <i>sq. ins.</i>	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	1	12.9	37	2.10	153	184	48	Rubber	Lead covered and rammed.
MAIN BILGE LINE PUMPS	1	1	25.8	19	1.30	64	64	52	"	"
GENERAL SERVICE PUMP	1	1	19.40	19	1.10	48.5	53	50	"	"
EMERGENCY BILGE PUMP	2	1	2.90	7	0.75	12	18.2	40	"	"
SANITARY PUMP	3	1	12.9	37	2.10	175	184	10	"	"
CIRC. SEA WATER PUMPS	3	1	2.9	7	0.75	10.5	18.2	14	"	"
CIRC. FRESH WATER PUMPS	2	1	48.5	91	2.60	425	461	34	"	"
AIR COMPRESSORS	2	1	2.9	7	0.75	9.6	18.2	15	"	"
FRESH WATER PUMP	2	1	19.4	19	1.10	49.7	53	42	"	"
ENGINE TURNING GEARS										
ENGINE REVERSING GEAR	3	2	2.97	37	1.85	262	304	32	"	"
LUBRICATING OIL PUMPS	1	1	38.70	19	1.60	71	83	35	"	"
OIL FUEL TRANSFER PUMP	1	1	19.4	37	2.60	265	351	160	"	"
WINDLASS	12	1	19.4	37	2.60	200	240	90	"	"
WINCHES, FORWARD	1	1	48.5	19	1.85	103	113	50	"	"
BOAT WINCH	8	1	19.4	37	2.60	265	351	90	"	"
WINCHES, AFT	1	1	77.5	37	1.60	130	160	180	"	"
CAPSTAN										
STEERING GEAR	2	1	77.5	37	1.60	125	160	170	"	"
(a) MOTOR GENERATOR	2	1	77.5	37	1.60	113	160	22	"	"
(b) MAIN MOTOR	1	1	4.50	7	0.90	22	24	55	"	"
WORKSHOP MOTOR										
VENTILATING FANS										
OIL SEPARATOR (LUB)	2	1	2.9	7	0.75	6.6	18.2	34	"	"
OIL SEPARATOR (FUEL)	2	1	2.9	7	0.75	12.8	18.2	15	"	"
REFRIGERATOR	1	1	9.35	7	1.30	34	37	34	"	"
CIRC. OIL PUMP	1	1	2.9	7	0.75	8	18.2	32	"	"
HARBOUR PUMP	1	1	14.5	7	1.60	46	46	30	"	"



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, 1938

The foregoing is a correct description.

*Albert*

Electrical Engineers.

Date

Sept. 24<sup>th</sup> 1938.



#### COMPASSES.

Minimum distance between electric generators or motors and standard compass

40 M.

Minimum distance between electric generators or motors and steering compass

38 M.

The nearest cables to the compasses are as follows:—

A cable carrying 2.5 Ampères 8 feet from standard compass 6 feet from steering compass.

A cable carrying 8 Ampères 9 feet from standard compass 7 feet from steering compass.

A cable carrying 0.4 Ampères 2 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 *all* course in the case of the standard compass, and *nil* degrees on *all* course in the case of the steering compass.

F. Schichau G. m. b. H. Elbing  
Abt. Schiffswerft zu Danzig

Builder's Signature.

Date 24. 9. 38.

*W. H. Schichau*

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.)

*This installation is fitted in accordance with the Society's Rules for Electrical Equipment, and constructed to the approved plans. Materials and workmanship are of good quality. The installation has been tried under full working conditions with satisfactory results.*

*Noted  
17/10/38*

Total Capacity of Generators 540 Kilowatts.

The amount of Fee ... \* £ 97: 10: When applied for, 20/9/1938.

Travelling Expenses (if any) £ : 6: When received, 18/10/1938.

\* 1/5 of fee to be credited to Bremen account.

Committee's Minute

TUE. 25 OCT 1938

Assigned

*See Minute on B. each.*

*R. Shaw*

Surveyor to Lloyd's Register of Shipping.



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