

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

18937

Date of writing Report 7th Sept. 1937 When handed in at Local Office 10th Sept. 1937 Port of Gothenburg

No. in Survey held at Gothenburg Date, First Survey 15th JULY Last Survey 28th AUG. 1937

Reg. Book. 57601 on the TWIN S.C. M/S "COLOMBIA" 510 Tons { Gross 5297 Net 2905

Built at Gothenburg By whom built Aktiebolaget Götaverken Yard No. 510 When built 1937

Owners Rederiaktiebolaget Nordstjernan Port belonging to Stockholm

Electric Light Installation fitted by Aktiebolaget Götaverken Contract No. 510 When fitted 1937

Is the Vessel fitted for carrying Petroleum in bulk no.

System of Distribution two wire system

Pressure of supply for Lighting 110 volts, Heating - 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

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 two at the starboard and two at the port side of the motorroom, 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 on a platform aft in the motorroom

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 of marble

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 mica-nite 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 each generator: A double pole linked circuit breaker with overload and reversed current trips and a single pole equalizer switch. For each outgoing circuit: A single pole switch and a fuse at 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 6

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

ohm meters 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, ~~triple~~ ~~quad~~ are the cables insulated and protected as per Tables IV, V, X or XI 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 **2 v.+3 pr. cent for lighting** ✓ **2 v.+5 " " " power** ✓ **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 in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit

Support and Protection of Cables, state how the cables are supported and protected **supported by metal clips. All power cables lead covered and armoured. Lighting cables lead covered in cabins. For the rest lead covered and armoured** ✓

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 **no** **-** 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 **no joints in main cables. Joints in section cables as per rule.** ✓

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 **-**

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 **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 **-**

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected **-**

where are the controlling switches situated **-** how are the cables led **-**

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 **-**

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

Are Lamps, other than searchlight lamps, No. of **-**, 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 **all except the turning motors** ✓, 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 **-** and **-**

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing **-** **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 unapproved 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 **-**

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.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	3	150	220	682	335	Diesel engine	Diesel oil	Above 150° F.
AUXILIARY	1	30	220	137	750			
EMERGENCY								
ROTARY TRANSFORMER	1	20	220	125	1150			
			110	182				

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Met.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole. Sq. mm	No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATOR	4-1	480-95	37	2,03-1,83	682-137	680-150	34-45-40-53	Rubber	Lead covered and armoured
EQUALISER CONNECTIONS	4-1	480-95	37	2,03-1,83			34-45-40-53	"	" " " "
AUXILIARY GENERATOR									
EMERGENCY GENERATOR									
ROTARY MOTOR	1	70	37	1,55	125	123	10		
TRANSFORMER GENERATOR	1	120	37	2,03	182	170	10		
ENGINE ROOM						175			
BOILER ROOM	1	16	19	1,04	32	50	10		" " " "
AUXILIARY SWITCHBOARDS									
Refrigerating fans and pumps	2	190	37	1,83	307,5	300	64		" " " "
Separators	1	95	37	1,83	130,6	150	60		" " " "
Water heaters thermo-tanks	1	150	37	2,26	233	275	56		" " " "
ACCOMMODATION aft	1	6	7	1,05	8	29	120		" " " "
shelterdeck starb. port.	1	10	7	1,55	18	38	60		" " " "
prog. deck starb. port.	1	10	7	1,55	18	38	75		" " " "
boatdeck forward	1	10	19	1,83	26	115	105		" " " "
Deck forward	1	10	7	1,55	18	38	170		" " " "
Lanterns	1	10	7	1,55	20	39	80		" " " "
WIRELESS	1	1,5	7	1,05	20	29	154		" " " "
SEARCHLIGHT							117		" " " "
MASTHEAD LIGHT	1	1,5	1	1,38	0,3	9	190-210		" " " "
SIDE LIGHTS	1	1,5	1	1,38	0,3	9	80-80		" " " "
COMPASS LIGHTS	1	1,5	1	1,38	0,3	9	10		" " " "
POOP LIGHTS	1	1,5	1	1,38	0,3	9	240		" " " "
CARGO LIGHTS									
ARC LAMPS									
HEATERS for water	1	2,5-16-50	7-19-19	0,67-1,38	14-14-14	45-90	16-50-100	30-20-32	" " " "
" " oil	1	25	19	1,30	54	62	20-32		" " " "

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Met.	Insulated with	HOW PROTECTED.
		No. per Pole.	Total Nominal Area per Pole. Sq. mm	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	2	140	37	1,55	218	246	67	Rubber	Lead covered and armoured
Thermotank fans	3	1	2,5	7	0,67	11	16	88-78-39	"	" " " "
Thermotank fans	3	1	2,5-1,5	7-1	0,67-1,38	11-0,6	16-9	46-33-66	"	" " " "
Fire extinguishing & bilge pump	1	1	35	19	1,53	69	75	53	"	" " " "
SANITARY PUMP	1	1	10	7	1,35	31,6	39	55	"	" " " "
CIRC. SEA WATER PUMPS	2	1	95	37	1,83	134	150	87-87	"	" " " "
CIRC. OIL PUMPS	1	1	1,5	1	1,38	6,7	9	24	"	" " " "
AIR COMPRESSOR	2	2	140	37	1,55	228	246	82-84	"	" " " "
FRESH WATER PUMP	1	1	2,5	7	0,67	12,8	16	80	"	" " " "
ENGINE TURNING GEAR	2	1	10	7	1,35	31,5	39	59-53	"	" " " "
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS	2	1	70	37	1,55	120	123	82-82	"	" " " "
OIL FUEL TRANSFER PUMP	1	1	35	19	1,53	69	75	25	"	" " " "
WINDLASS	1	1	150	37	2,26	243	275	204	"	" " " "
WINCHES, FORWARD	2-2	1	120	37	2,03	222	230	167-171	"	" " " "
" " "	2-2-2	1	95	37	1,83	184	190	178-133-143	"	" " " "
WINCHES, AFT	2-2-2	1	95	37	1,83	184	190	106-118-153	"	" " " "
Galley board	1	1	10	7	1,35	27	39	29	"	" " " "
STEERING GEAR										
(a) MOTOR GENERATOR										
(b) MAIN MOTOR	2	1	50	19	1,83	98	100	150-142	"	" " " "
WORKSHOP MOTOR	1	1	2,5	7	0,67	13	16	86	"	" " " "
VENTILATING FANS motor/room	2	1	1,5	1	1,38	6,7	9	26-40	"	" " " "
" " cooling room	1	1	2,5	7	0,67	12,1	16	92	"	" " " "
" " "	3	1	4	7	0,86	21	23	100-36-86	"	" " " "
" " "	2	1	10	7	1,35	38,5	39	44-102	"	" " " "
Refrigerators	2	2	190	37	1,83	288	300	63-70	"	" " " "
"	1	1	25	19	1,30	57,5	62	76	"	" " " "
Brinepumps	3	1	16	19	1,04	39,5	50	47-45-45	"	" " " "
"	1	1	1,5	1	1,38	4,7	9	42	"	" " " "
Cooling water pump	2	1	6-1,5	7-1	1,05-1,38	23,5-8,7	29,9	30-35	"	" " " "
Separators	3	1	4	7	0,86	18,5	23	42	"	" " " "
Bath-water pump	1	1	2,5	7	0,67	10,5	16	17-23-22	"	" " " "
Salt-	1	1	1,5	7	1,38	8,5	9	78	"	" " " "
"	1	1	4	7	0,86	16,5	23	86	"	" " " "

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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.

AKTIEBOLAGET GÖTTAVERKEN
Must S. Yedun

Electrical Engineers.

Date Sept. 4th 1937.

COMPASSES.

Distance between electric generators or motors and standard compass about 8 meters

Distance between electric generators or motors and steering compass " 7 "

The nearest cables to the compasses are as follows:—

A cable carrying	2	Ampères	5	feet from standard compass	6	feet from steering compass.
A cable carrying	1.5	Ampères	15	feet from standard compass	3	feet from steering compass.
A cable carrying	25	Ampères		feet from standard compass	15	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 _____ degrees on _____ course in the case of the standard compass, and _____ degrees on _____ course in the case of the steering compass.

AKTIEBOLAGET GÖTTAVERKEN
Must S. Yedun

Builder's Signature.

Date Sept. 4th 1937.

Is this installation a duplicate of a previous case _____ If so, state name of vessel _____

General Remarks (State quality of workmanship, opinions as to class, etc.)

The electric installation of this vessel has been fitted on board under our inspection and to our satisfaction.

The workmanship is good and all the Requirements of the Rules have been complied with.

Certificates for the generators of Nos 510 and for the motors of Nos 510 and 511 are attached herewith.

Noted

17/9/37

Total Capacity of Generators 480 Kilowatts.

The amount of Fee ... NP 858:80 : 10/9/37

Travelling Expenses (if any) £ :

When received, NP 858:80 pd. 20.9.37

S. Berthelms Steu. Plussone
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE 21 SEP 1937

Assigned *See other F.E. report*

750,030.—Translet.
The Surveyors are requested not to write on or below the space for Committee's Minute.