

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

FEB 20 1940

Received at London Office

Date of writing Report 19th Feb 1940 When handed in at Local Office 16th Feb 1940 Port of Gothenburg
 No. in Survey held at Gothenburg Date, First Survey 25th Nov. 1939 Last Survey 8th Feb. 1940
 Reg. Book Luppt (Number of Visits...2)
38051 on the M/S. "ANDREA BRÖVIG" Tons { Gross 10173
 Net 6083
 Built at Gothenburg By whom built Aktiebolaget Götaverken Yard No. 539 When built 1940
 Owners Th. Brövig Port belonging to Farsund
 Electric Light Installation fitted by Aktiebolaget Götaverken Contract No. 539 When fitted 1940
 Is the Vessel fitted for carrying Petroleum in bulk yes

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

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 two at the port and one at the starboard 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 at the port side of 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 micaite 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

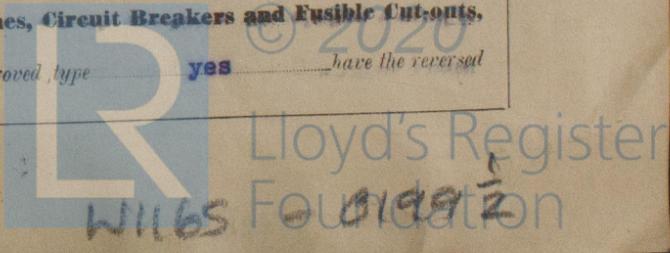
Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches For main generators: A double pole circuit breaker with overload and reversed current trips and a single pole equalizer switch. For outgoing circuits: Double pole switches and 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 6 ammeters 4 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** 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 ~~in~~ ~~are~~ 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 **2 v + 3 pr cent for lighting** **Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load **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 laid under machines or floorplates **yes** if so, are they adequately protected **yes**

Are cables in machinery spaces, galleys, lavatories, bathrooms and lavatories lead covered or run in conduit **yes** supported by metal clips. All power cables **lead covered and armoured**

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

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 **-** 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 **-** are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected **contained in gastight fittings** how are the cables led **in gastight tubing** where are the controlling switches situated **outside of the dangerous spaces** 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 **yes** are air heaters constructed and fitted as per Rule **-**

Searchlight Lamps, No. of **one** whether fixed or portable **portable**, 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 **all except the turning motor** 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 **-** 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** **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 **yes**

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amps.	Rev. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	140	220	636	450	Diesel engine	Diesel oil	Above 150° F.
AUXILIARY	1	25	110	217	525	Steam	"	"
EMERGENCY								
ROTARY TRANSFORMER	1	20	220	114	1500			

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.			COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return) see met.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole Sq. Millim.	No.	Diameter.	In Circuit.	Rule.				
MAIN GENERATOR	3	450	37	2.27	636	600	16 - 30	Rubber	Lead covered and armoured	
EQUALISER CONNECTIONS	3	450	37	2.27	600	600	-	"	" " " "	
AUXILIARY GENERATOR	2	140	37	1.55	217	246	13	"	" " " "	
EMERGENCY GENERATOR										
ROTARY TRANSFORMER MOTOR	1	70	37	1.55	114	123	21	"	" " " "	
ROTARY TRANSFORMER GENERATOR	1	150	37	2.27	182	200	16	"	" " " "	
ENGINE ROOM										
BOILER ROOM	1	6	7	1.05	26	29	10	"	" " " "	
AUXILIARY SWITCHBOARDS										
Work shop motor board	1	10	7	1.35	37.5	39	16	"	" " " "	
Separator board	1	95	37	1.83	151.6	150	48	"	" " " "	
Oil heaters	1	25	19	1.29	54.5	62	5 - 6	"	" " " "	
Galley board	1	25	19	1.29	63	62	78	"	" " " "	
Thermotank motors	1	4	7	0.86	22.3	23	52	"	" " " "	
ACCOMMODATION aft S.B.	1	6	7	1.05	15	29	38	"	" " " "	
" " Port	1	6	7	1.05	16	29	24	"	" " " "	
" " midships	1	95	37	1.83	90	150	200	"	" " " "	
" " forward	1	10	7	1.35	6	39	240	"	" " " "	
Lanterns	1	4	7	0.86	2	23	212	"	" " " "	
WIRELESS	1	16	19	1.04	25	50	212	"	" " " "	
SEARCHLIGHT	1	2.5	7	0.67	13.5	16	25	"	" " " "	
MASTHEAD LIGHT	1	1.5	1	1.38	0.4	9	130 - 180	"	" " " "	
SIDE LIGHTS	1	1.5	1	1.38	0.4	9	50 - 50	"	" " " "	
COMPASS LIGHTS	1	1.5	1	1.38	0.4	9	20	"	" " " "	
POOP LIGHTS	1	1.5	1	1.38	0.4	9	250	"	" " " "	
CARGO LIGHTS										
HEATERS for water	1	10	7	1.35	36	39	22	"	" " " "	

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.			COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return) see met.	Insulated with	HOW PROTECTED.
		No. per Pole.	Total Nominal Area per Pole Sq. Millim.	No.	Diameter.	In Circuit.	Rule.				
BALLAST PUMP	1	1	16	19	1.04	47	50	95	Rubber	Lead covered and armoured	
MAIN BILGE LINE PUMPS	1	1	16	19	1.04	47	50	89	"	" " " "	
GENERAL SERVICE PUMP											
EMERGENCY BILGE PUMP											
SANITARY PUMP											
CIRC. SEA WATER PUMPS	2	2	140	37	1.55	220	246	8 - 9	"	" " " "	
Sea Circ. WATER PUMPS	1	1	4	7	0.86	15.7	23	38	"	" " " "	
AIR COMPRESSOR	2	1	150	37	2.27	197	200	43 - 45	"	" " " "	
FRESH WATER PUMP	1	1	2.5	7	0.67	12.5	16	36	"	" " " "	
ENGINE TURNING GEAR	1	1	70	37	1.55	124	123	84	"	" " " "	
ENGINE REVERSING GEAR											
LUBRICATING OIL PUMPS	2	2	140	37	1.55	237	246	25 - 24	"	" " " "	
OIL FUEL TRANSFER PUMP	1	1	25	19	1.29	58	62	66	"	" " " "	
WINDLASS											
WINCHES, FORWARD											
WINCHES, AFT											
STEERING GEAR											
(a) MOTOR GENERATOR											
(b) MAIN MOTOR	1	1	25	19	1.29	58	62	108	"	" " " "	
WORKSHOP MOTORS	2	1	6-2.5	7	1.05-0.67	25.5-12	29-16	5 - 6	"	" " " "	
VENTILATING FANS	3	1	1.5	1	1.38	8.2, 3.8	9	6, 0-28-30	"	" " " "	
Cooling w. pump	1	1	1.5	1	1.38	8.7	9	26	"	" " " "	
Refrigerator	1	1	10	7	1.35	39	39	37	"	" " " "	
Cooling w. pump	1	1	6	7	1.05	24	29	42	"	" " " "	
Separators	3	1	2.5	7	0.67	14.2	16	15-13-11	"	" " " "	

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.

AKTIEBOLAGET GÖTAVERKEN

Electrical Engineers.

Date February 7th, 1940.

COMPASSES.

Minimum distance between electric generators or motors and standard compass about 9 met.
 Minimum distance between electric generators or motors and steering compass " 8 "
 The nearest cables to the compasses are as follows:—
 A cable carrying 25 Amperes 21 feet from standard compass 18 feet from steering compass.
 A cable carrying 1 Amperes 8 feet from standard compass 5 feet from steering compass.
 A cable carrying _____ Amperes _____ 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 _____ course in the case of the standard
 compass, and 0 degrees on _____ course in the case of the steering compass.

AKTIEBOLAGET GÖTAVERKEN

Builder's Signature.

Date February 7th, 1940.

Is this installation a duplicate of a previous case Yes If so, state name of vessel ARISTOPHANES. Gpt. 1/17/35

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

This electrical installation has been fitted on board the vessel under my supervision & to my satisfaction and has been tested & found satisfactory. The workmanship is good and the requirements of the Rules have been complied with.

The generators over 100 kw. have been constructed & tested under the supervision of the Society's Surveyors.

The maker's test certificates for the motors and the steam driven generator are attached.

Notice
 L. J.
 22/2/40.

Total Capacity of Generators 305 Kilowatts.

The amount of Fee 1/2 kn 725:85 : 16 Feb 40
1/2 kn 181:45
 Travelling Expenses (if any) kn 37:70 : 29.2.1940

H.B. Lippin for P. Johnson
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 23 FEB 1940

Assigned

See for. F.C. 12832

The Surveyors are requested not to write on or below the space for Committee's Minute.



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