

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office DEC 11 1937

Date of writing Report 24<sup>th</sup> November 1937 When handed in at Local Office 19 Port of Copenhagen

No. in Survey held at Copenhagen Date, First Survey 5<sup>th</sup> October Last Survey 19<sup>th</sup> November 1937  
 Reg. Book. 37140 on the Twin Screw Motor Tanker "ARGUS" (Number of Visits... 10.....)

Built at Copenhagen By whom built Apt. Bumsted & Wain's Tons { Gross 9512  
 Net 5874

Owners Septem Shipping Ltd. Port belonging to Panama City Yard No. 628 When built 1937

Electric Light Installation fitted by The builders Contract No. - When fitted 1937

Is the Vessel fitted for carrying Petroleum in bulk yes

System of Distribution 2 conductor insulated system

Pressure of supply for Lighting 110 volts, Heating - volts, Power 220 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 yes, is an adjustable regulating resistance fitted in series with each shunt field yes

approved never Have certificates of test results for machines under 100 kw. been submitted and approved none

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 floor level, is the ventilation in way of the generators satisfactory yes

are they clear of all inflammable material yes if situated near unprotected no woodwork etc.

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 forward end of engine room floor level

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 yes

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 generators: 2 3 pole circuit breaker with melrod & reversed current trips

Outgoing circuit: 2 pole switch with fuses on each pole

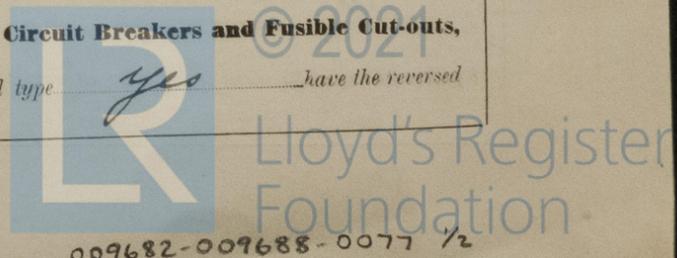
Are turbine driven generators fitted with emergency trip switch as per rule - Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material yes

Instruments on main switchboard 6 ammeters 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 voltmeter with ohm scale & set of earth lamps for each pole

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 single are the cables insulated and protected as per Tables IV, V, X, XI, XII, 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 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 yes, or waterproof insulating tape yes **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 no

Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit yes

**Support and Protection of Cables,** state how the cables are supported and protected unarmoured supported by steel clips

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 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 no joints

**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 in the control room 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 no

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 in pump rooms cables laid in gas tight steel tubes, lamps contained in strong glass, bulbs protected by metal grids how are the cables led in gas tight tubes

where are the controlling switches situated in bridge house

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

**Searchlight Lamps, No. of** inclusion whether fixed or portable yes, 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 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 woodwork etc. if not of this type, state distance of the combustible material horizontally or vertically above the motors no and no

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing no 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 fitted 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.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	80	220	364	400	2 cyl 250SA Diesels	Crude oil	Above 150°F
AUXILIARY	1	30	220	136	650	1 cyl steam engine		
EMERGENCY								
ROTARY TRANSFORMER	1	15	110	136	1500	25HP Electric motor		

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. in.	No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATOR	2	150	37	2.27	364	412	32-45-54	Indian rubber	Lead lined & wire armoured
EQUALISER CONNECTIONS	1	150	37	2.27		206	16-225-275		Wire armoured
AUXILIARY GENERATOR	1	95	19	2.53	136	152	55		
EQUALISER	1	70	19	2.16		124	27.5		
ROTARY TRANSFORMER MOTOR	1	50	19	1.83	95	98	40		
ROTARY TRANSFORMER GENERATOR	1	95	19	2.53	136	152	40		
ENGINE ROOM	1	10	7	1.35	20	38	6		
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
Turning gear	1	25	7	2.13	64	65	57		
Workshops etc	1	10	7	1.35	25	38	71		
Separators	1	10	7	1.35	28	38	38		
Piping machinery	1	16	7	1.7	42	49	68		
Accommodation Saloon	1	16	7	1.7	40	49	164		
Navigation Deck	1	4	7	0.85	45	22	188		
Officers aft	1	25	7	2.13	60	65	170		
Crew aft	1	6	7	1.05	25	29	65		
WIRELESS	1	10	7	1.35	20	38	188		
SEARCHLIGHT inclusion	1	25	7	2.13		65	110		
MASTHEAD LIGHT	1	1.5	1	1.38	0.4	9	150		
SIDE LIGHTS	1	1.5	1	1.38	0.4	9	40		
COMPASS LIGHTS	1	1.5	1	1.38	0.4	9	10		
POOP LIGHTS	1	1.5	1	1.38	0.2	9	150		
CARGO LIGHTS	1	1.5	1	1.38	6	9			
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. in.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP										
MAIN BILGE LINE PUMPS	1	1	16	7	1.7	40	49	71	India rubber	Lead lined & wire armoured
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP										
SANITARY PUMP	1	1	4	7	0.85	12	22	40		
CIRC. SEA WATER PUMPS	2	1	20	19	2.16	120	124	88		
CIRC. FRESH WATER PUMPS	1	1	50	19	1.83	95	98	88		
AIR COMPRESSOR										
FRESH WATER PUMP										
ENGINE TURNING GEAR	2	1	10	7	1.35	32	38	20		
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS	2	1	185	37	2.52	228	232	77		
OIL FUEL TRANSFER PUMP	1	1	16	7	1.37	48	49	54		
WINDLASS										
WINCHES, FORWARD										
WINCHES, AFT										
STEERING GEAR										
(a) MOTOR GENERATOR										
(b) MAIN MOTOR	1	1	50	19	1.83	88	98	108		
WORKSHOP MOTOR	1	1	4	7	0.85	14	22	15		
VENTILATING FANS										
Separators	2	1	4	7	0.85	14	22	6		
CO2 compressor	1	1	16	7	1.7	34	49	10		
cool. pump for same	1	1	2.5	7	0.67	8	16	24		

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  
 BURMEISTER & WAIN'S MASKIN- OG SKIBSBYGGERI  
*A. Hornum*

Electrical Engineers.

Date 8-11-37

COMPASSES.

Minimum distance between electric generators or motors and standard compass 75 m

Minimum distance between electric generators or motors and steering compass 72 m

The nearest cables to the compasses are as follows:—

A cable carrying 4.5 Ampères 2 m feet from standard compass 2 m feet from steering compass.

A cable carrying 0.13 Ampères *4 lamp in* feet from standard compass *and in* 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.

AKTIESELSKABET  
 BURMEISTER & WAIN'S MASKIN- OG SKIBSBYGGERI  
*A. Hornum*

Builder's Signature.

Date 8-11-37

Is this installation a duplicate of a previous case *yes* If so, state name of vessel *B. W. Yard No. 627 13 Oct*

General Remarks (State quality of workmanship, opinions as to class, &c. *The above electric installation*

*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 1/3-29/4-15-1937*

*The material used in construction is of first class description and the workmanship is good*

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

*With  
 J. J.  
 14/12/37.*

Total Capacity of Generators 190 Kilowatts.

The amount of Fee ... *Pr. 929.60* { When applied for, 9-12-37

Travelling Expenses (if any) £ - { When received, 18/1-38

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

Committee's Minute

FRI. 17 DEC 1937

Assigned

*See Cpr J.E. 10407*

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



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