

## 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

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 A. B. Bunkers & Wain's Yard No. 628 When built 1937  
Owners Skandinavisk Shipping Ltd. Port belonging to Panama City

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 220 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

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 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

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

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

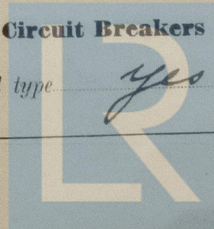
switches Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches For generators: 2 3 pole circuit breakers with overload &amp; reverse current trips

Outgoing circuit: 2 2 pole switches 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 &amp; set of earth lamps for each pole 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



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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 *yes*

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 engine 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* *yes in gas light tubes* *yes in bridge house* *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*

**Searchlight Lamps, No. of connections** 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 *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 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 1/2 HP 125 C.S.A. Diesel	Crude oil	about 150°F
AUXILIARY	1	30	220	136	650	1 1/2 HP steam engine		
EMERGENCY								
ROTARY TRANSFORMER	1	15	110	136	1500	25 HP electric motor		

## GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length. (Lead and Return) Feet. <i>112</i>	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole Sq. ins. <i>150</i>	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR ... ..	2	150	37	2.27	364	412	32.45.54	Indian rubber	Lead covered & wire armoured
EQUALISER CONNECTIONS ... ..	1	150	37	2.27	-	206	16.215.275	- - - -	Wire armoured
AUXILIARY GENERATOR... ..	1	95	19	2.53	136	152	55	- - - -	- - - -
<del>EQUALISER</del> Emergency Generator	1	70	19	2.16	-	124	27.5	- - - -	- - - -
ROTARY TRANSFORMER { MOTOR ... ..	1	50	19	1.83	95	98	40	- - - -	- - - -

## 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	1	1	16	7	1.7	40	49	71	India rubber	Lead covered & wire armoured
MAIN BILGE LINE PUMPS	1	1	16	7	1.7	40	49	71	---	---
GENERAL SERVICE PUMP	1	1	16	7	1.7	40	49	71	---	---
EMERGENCY BILGE PUMP	1	1	4	7	0.85	12	22	40	---	---
SANITARY PUMP	1	1	20	19	2.16	120	124	88	---	---
CIRC. SEA WATER PUMPS	2	1	50	19	1.83	95	98	88	---	---
CIRC. FRESH WATER PUMPS	1	1	50	19	1.83	95	98	88	---	---
AIR COMPRESSOR	1	1	50	19	1.83	95	98	88	---	---
FRESH WATER PUMP	2	1	10	7	1.35	32	38	20	---	---
ENGINE TURNING GEAR	2	1	185	37	2.52	228	232	77	---	---
ENGINE REVERSING GEAR	1	1	16	7	1.37	48	49	54	---	---
LUBRICATING OIL PUMPS	1	1	16	7	1.37	48	49	54	---	---
OIL FUEL TRANSFER PUMP	1	1	16	7	1.37	48	49	54	---	---
WINDLASS	1	1	16	7	1.37	48	49	54	---	---
WINCHES, FORWARD	1	1	16	7	1.37	48	49	54	---	---
WINCHES, AFT	1	1	16	7	1.37	48	49	54	---	---
STEERING GEAR—										
(a) MOTOR GENERATOR	1	1	50	19	1.83	88	98	108	---	---
(b) MAIN MOTOR	1	1	4	7	0.85	14	22	15	---	---
WORKSHOP MOTOR	1	1	4	7	0.85	14	22	15	---	---
VENTILATING FANS	2	1	4	7	0.85	14	22	6	---	---
Separators	1	1	16	7	1.7	34	49	10	---	---
CO <sub>2</sub> compressor	1	1	25	7	0.67	8	16	24	---	---
cool pump for same	1	1	25	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

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

Builder's Signature.

Date 8-11-37

Is this installation a duplicate of a previous case yes If so, state name of vessel B. Wynd 74627 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 13-29-4-15-1937

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 and found satisfactory.

With  
J.Y.  
14/12/37

Total Capacity of Generators 190 Kilowatts.

The amount of Fee ...

£ 929.60

When applied for,  
9.12.1937

Travelling Expenses (if any) £

When received,  
18/11/1938

Committee's Minute

FRI. 17 DEC 1937

Assigned

See Cpr J.E. 10407

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



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