

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

31 DEC 1928
Received at London Office

Date of writing Report 2nd Decr 1928 When handed in at Local Office 19 Port of Copenhagen

No. in Survey held at Copenhagen Date, First Survey 4th September Last Survey 2nd December 1928
Reg. Book. (Number of Visits 27)

92052 on the Twin Screw Motor Vessel "SANDAR." Tons { Gross 7038.13
Net 4549.01

Built at Copenhagen By whom built Akt. Burmeister & Wain's Maskin og Skibsbyggeri. Yard No. 549. When built 1928

Owners Virke's Oederiaaktieselskab. (G. Virke.) Port belonging to Sandefjord.

Electric Light Installation fitted by Akt. Burmeister & Wain's Maskin og Skibsbyggeri. Contract No. 549. When fitted 1928

System of Distribution Two conductor, insulated system.

Pressure of supply for Lighting 110 volts, Heating ✓ 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 rating Yes., are they compound wound Yes.
are they over compounded 5 per cent. No per cent., 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.

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 machinery space.

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 Not situated near unprotected woodwork or other combustible material., 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 In the machinery space.

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 Not situated near unprotected woodwork or other combustible material.

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.

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.

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., proportion of omnibus bars Yes.

individual fuses to voltmeter, pilot or earth lamp Yes., connections of switches Yes.

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches For each generator

a 3 pole circuit breaker with overload and reversed current trips.

For each outgoing circuit, a double pole switch and a double pole fuse.

Instruments on main switchboard 4 ammeters 3 voltmeters ✓ synchronising device for paralleling purposes.

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system One voltmeter for 220 volts and one voltmeter for 110 volts are provided with Ohm scale and the main switchboard is provided with 2 sets of earth testing lamps.

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules Yes.

Joint Boxes Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule Yes.



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Cables: Single, twin, concentric, or multicore *single & twin* are the cables insulated and protected as per Tables IV or V of the Rules **IV**

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load *abt 5 volts*

Cable Sockets and other connections, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets *yes.*

Paper Insulated Cables. If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *No paper insulated cables used.*

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.*

Support and Protection of Cables, state how the cables are supported and protected *The cables are supported by screwed clips, and where deemed necessary protected by sheet iron casings or iron tubes. - Armoured cables used.*

If cables are run in wood casings, are the casings and caps secured by screws , are the cap screws of brass , are the cables run in separate grooves . If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII *yes.*

Refrigerated Chambers, if lights are fitted, 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 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 *No earthing connections.*

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

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 *The lamps in the pump rooms are contained in gas-tight fittings, protected by strong metal guards. The cables are led in gas-tight tubes with ends screwed into the lamp fittings.*

where are the controlling switches situated *Outside these spaces - for the cargo pump room and the bridge space, in the alley way to the saloon on the bridge deck, for the small pump room forward, in the fore-castle. - Double pole switches used.*

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 *yes.*

if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or steam proof type *not situated near unprotected woodwork or other combustible material.*

if not of this type, state distance of the combustible material horizontally or vertically above the motors

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*

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office

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	21	66 each	220	300	400	Auxiliary Diesel engines.	Crude oil	above 150° F.
AUXILIARY	1	5	110	45.5	550	Direct coupled steam engine.		
EMERGENCY								
ROTARY TRANSFORMER	1	12	220/110	109	1500	Electric motor.		

LIGHTING AND HEATING CONDUCTORS.

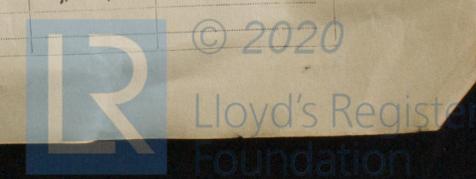
Ref. No.	DESCRIPTION	No. of Conductors	Effective Area of each Conductor Sq. mm.	COMPOSITION OF STRAND		Total Maximum Current Amps.	Approximate Length (Lead and Return) METRES	Insulated with	HOW PROTECTED.
				No.	Diameter mm.				
	MAIN GENERATOR	2	95	19	2.52	300	Port-17x2 Starb-20x2 Star-17x2 Star-20x2	Vulcanized rubber	Lead covered, braided and wire armoured.
	EQUALISER CONNECTIONS	1	95	19	2.52			"	"
	AUXILIARY GENERATOR	1							
	EMERGENCY GENERATOR	1	70	19	2.16	109		"	"
	ROTARY TRANSFORMER	1	35	19	1.53	72	abt 38	"	"
	AUXILIARY SWITCHBOARDS								
	ENGINE ROOM	1	4	7	0.86	14	abt 6	"	"
	BOILER ROOM								
	ACCOMMODATION Starb. AFT.	1	2.5	7	0.67	7	" 44	"	"
	" Port. AFT.	1	2.5	7	0.67	12.5	" 46	"	"
	SALOON AMIDSHIPS.	1	1.6	7	1.70	27	" 152	"	"
	NAVIGATION ROOM.	1	2.5	7	0.67	4	" 160	"	"
	WIRELESS	1	10	7	1.35	18	" 182	"	"
	SEARCHLIGHT						" 106	"	"
	MASTHEAD LIGHT MAIN	1	1.5	1	1.38	0.4	" 122	"	"
	SIDE LIGHTS - each	1	1.5	1	1.38	0.4	" 26	"	"
	COMPASS LIGHTS - each	1	1.5	1	1.38	0.14	" 10	"	"
	POOP LIGHTS	1	1.5	1	1.38	0.23	" 214	"	"
	CARGO LIGHTS								
	ARC LAMPS								
	HEATERS								

MOTOR CONDUCTORS.

Ref. No.	DESCRIPTION	No. of Motors	Effective Area of each Conductor Sq. mm.	COMPOSITION OF STRAND		Total Maximum Current Amps.	Approximate Length (Lead and Return) METRES	Insulated with	HOW PROTECTED.
				No.	Diameter mm.				
	BALLAST PUMP								
	MAIN BILGE LINE PUMPS								
	GENERAL SERVICE PUMP								
	EMERGENCY BILGE PUMP								
	BILGE AND SANITARY PUMPS	1	10	7	1.35	34.9	abt 54	"	"
	CIRC. SEA WATER PUMPS								
	CIRC. FRESH WATER PUMPS								
	AIR COMPRESSOR								
	FRESH WATER PUMP								
	ENGINE TURNING GEAR	2	6	7	1.05	25.6	Port: 44 Starb: 10	"	"
	ENGINE REVERSING GEAR								
	COOLING WATER AND LUBRICATING OIL PUMPS	2	70	19	2.16	130.0	abt 78	"	"
	OIL FUEL TRANSFER PUMP	1	10	7	1.35	34.9	" 40	"	"
	WINDLASS								
	WINCHES, FORWARD								
	WINCHES, AFT								
	STEERING GEAR								
	(a) MOTOR GENERATOR								
	(b) MAIN MOTOR	1	50	19	1.83	84	" 99	"	"
	WORKSHOP MOTOR TURNING LATHE	1	2.5	7	0.67	7	" 16	"	"
	VENTILATING FANS								
	DRILLING MACHINE	1	1.5	1	1.38	4.5	" 6	"	"
	GRINDING	1	1.5	1	1.38	1.6	" 12	"	"
	LUBRICATING OIL PURIFIER	1	2.5	7	0.67	5.4	" 10	"	"
	FUEL OIL	1	2.5	7	0.67	11.5	" 8	"	"
	CO ₂ COMPRESSOR	1	6	7	1.05	21	" 91	"	"
	BRINE PUMP	1	2.5	7	0.67	6	" 14	"	"
	BLOWER IN GALLEY	1	1.5	1	1.38	1	" 50	"	"

*an additional dynamo = 80KW
2 sets of amp. 100W
2 sets of amp. 100W
fitted 12.36
The Port Ford original set replaced by an 80KW set driven by 2 sets of amp.*

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All Conductors are of annealed copper conforming to British Standard Specification No. 7.
 The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.
 The foregoing is a correct description.

AKTIESELSKABET
 BURMEISTER & WAINSKIN- OG SKIBSBYGGERI

Electrical Engineers.

Date

COMPASSES.

Distance between electric generators or motors and standard compass *abt. 66 Metres*

Distance between electric generators or motors and steering compass *" 67 "*

The nearest cables to the compasses are as follows:—

A cable carrying *3.7* Amperes *abt 9* feet from standard compass and *abt 12* feet from steering compass.

A cable carrying *0.14* Amperes *to the lamp is not from* standard compass *and in* 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 *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.

AKTIESELSKABET
 BURMEISTER & WAINSKIN- OG SKIBSBYGGERI

Builder's Signature.

Date

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, &c.)

The whole electric power and lighting installation as above described has been fitted in accordance with the requirements of the Society's Rules, the approved plan and the Secretary's letter E. dated the 3rd August 1928.

The material used in the installation is of superior quality and the workmanship is of good description in every respect.

The whole electric installation has been tested under full power working condition and found to work satisfactorily.

It is submitted that
 this vessel is eligible for
 THE RECORD.

Elec. Light

J.S.A.

9/1/29.

Recommend the vessel to have notation in the Register Book of Electric Light.

Total Capacity of Generators

~~217 kW~~ *231 kW*

Kilowatts.

The amount of Fee ...

4,606.97

When applied for,

28/12/28

When received,

24/1/29

Travelling Expenses (if any) £

A.C. Fisher
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned

Electric Light