

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 4 SEP 1934

Date of writing Report 25/8 1934 When handed in at Local Office 19 Port of Copenhagen

No. in Survey held at Odense Date, First Survey 8/6 1934 Last Survey 11/5 1934
Reg. Book. (Number of Visits 12)

82035 on the SINGLE SC. MOTOR VESSEL "NORA MÆRSK" Tons { Gross 6270.70
Net 3888.51

Built at Odense By whom built Odense Haaskibvaerk Yard No. 52 When built 1934

Owners S/S JENSENBERG of "DANSKELIN. af 1912" 9/10 Port belonging to Copenhagen

Electric Light Installation fitted by Dansk Elektricitetskompani Contract No. When fitted 1934

Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Two conductor insulated system

Pressure of supply for Lighting 110 volts, Heating 220 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 rating 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

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 3 main generators in the motor room, an emergency gen. in engine casing, 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 in the forward end of the motor room Switch board for light inside engine casing was emergency generator

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 same compliance

Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes Yes, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards

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, proportion of omnibus bars Yes, accessibility of all parts Yes, absence of fuses on back of board Yes, connections of switches Yes

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches GENERATORS: a double pole

circuit breaker with overload and reversed-current trip as per SECT. 3 PAR. 3. A. (f)

OUTGOING CIRCUITS: A fuse on each pole and a double pole linked switch.

Instruments on main switchboard 6 ammeters 4 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

2 sets of earth lamps (220 x 110 volts), One Voltmeter fitted with Ω scale.

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* *twins* are the cables insulated and protected as per Tables IV, V, XI or XII of the Rules *Yps.*

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load *LIGHT 4.5 Volts, POWER 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 *Yps.*

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 *Yps.*

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 *Yps.*

Support and Protection of Cables, state how the cables are supported and protected *armoured cables used, supported by clips, protected by steel casing or laid in tubes.*

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

Refrigerated Chambers, if lights are fitted, are the cables and fittings in accordance with the special requirements *Yps.*

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 *Yps.*

Bushes in Beams and Non-watertight Partitions, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed *Yps.* state the material of which the bushes are made *Lead.*

Earthing Connections, state what earthing connections are fitted and their respective sectional areas *Yps.*

are their connections made as per Rule *Yps.*

Alternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule *Yps.*

Emergency Supply, state position and method of control of the emergency supply and how the generator is driven *an emergency generator driven by a single cylinder 455 SA 14/12 BHP crude oil engine is placed inside engine casing lower with upper deck. A switch-over is fitted on the switchboard for light uses generator.*

Navigation Lamps, are these separately wired *Yps.* controlled by separate switch and separate fuses *Yps.* are the fuses double pole *Yps.* are the switches and fuses grouped in a position accessible only to the officers on watch *Yps.*

has each navigation lamp an automatic indicator as per Rule *Yps.*

Secondary Batteries, are they constructed and fitted as per Rule *Yps.*

Fittings, are all fittings on weather decks, in stokeholds and engine rooms, and wherever exposed to drip or condensed moisture, watertight *Yps.*

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 *lamps in the engine room.*

Lead chambers contained in glass globes protected by iron grids.

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

how are the cables led *Yps.*

where are the controlling switches situated *Yps.*

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

Arc Lamps, other than searchlight lamps, No. of *Yps.* are their live parts insulated from the frame or case *Yps.* are their fittings as per Rule *Yps.*

Motors, are their working parts readily accessible *Yps.* are the coils self-contained and readily removable for replacement *Yps.*

are the brushes, brush holders, terminals and lubricating arrangements as per Rule *Yps.* are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material *Yps.*

are they protected from mechanical injury and damage from water, steam or oil *Yps.* are their axes of rotation fore and aft *Yps.*

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 *Yps.*

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

Control Gear and Resistances, are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule *Yps.*

Lightning Conductors, where lightning conductors are required, are these fitted as per Rule *Yps.*

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 *Yps.*

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

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				Revs. per Min.	DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amperes.				Fuel Used.	Flash Point of Fuel.
MAIN	2	100	220	455	320	3 x 25CSA DIESEL ENGINES	DIESEL OIL	> 150° F.	
AUXILIARY	1	66	220	300	320	" " " "	" "	" "	
EMERGENCY	1	7	110	64	900	1 x 45CSA SEMI-DIESEL ENG.	" "	" "	
ROTARY TRANSFORMER	1	20	110	182	1500	30 HP ELECTROMOTOR	" "	" "	

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	No. per Pole.	CONDUCTORS. Total Effective Area per Pole Sq. inch.	COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
			No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATORS... 100 KW.	2	2,200	37	2.62	455	490	42-60	India	Lead covered
EQUALISER CONNECTIONS		200	37	2.62		245	21-30	rubber	and
MAIN AUXILIARY GENERATOR... 66 KW.	1	275	61	2.39	300	295	43	"	Lead wire
EQUALISER CONNECTIONS		150	37	2.27		205	22	"	armoured.
EMERGENCY GENERATOR	1	50	19	1.83	100	98	4	"	"
ROTARY TRANSFORMER GENERATOR	1	120	37	2.03	182	177	6	"	"
ENGINE ROOM	1	6	7	1.05	15	28.6	8	"	"
EMERGENCY GENERATOR BOILER ROOM	1	70	19	2.10	64	124	4	"	"
AUXILIARY SWITCHBOARDS FOR LIGHT	1	95	19	2.52	140	147	68	"	"
ACCOMMODATION									
DECKHOUSE I	1	50	17	1.83	80	98	128	"	"
" II	1	50	19	1.83	60	98	100	"	"
AFT	1	10	7	1.70	25	48.7	152	"	"
WIRELESS PROJECTORS SEARCHLIGHT	1	10	7	1.35	20	38	140	"	"
SEARCHLIGHT (FURNACE)	1	2.5	7	0.67	2	15.5	52	"	"
MASTHEAD LIGHT									
SIDE LIGHTS									
COMPASS LIGHTS	1	2.5	7	0.67	8	15.5	120	"	"
POOP LIGHTS									
CARGO LIGHTS									
ARC LAMPS									
HEATERS	1	50	19	1.83	70	98	100	"	"

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS. No. Per Pole.	CONDUCTORS. Total Effective Area per Pole Sq. inch.	COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	1	25	7	2.13	50	63	50	rubber	Lead covered
DEEP TANK MAIN BILGE PUMPS	1	1	200	37	2.62	217	245	30	rubber	and
CIRCULAR FUEL OIL GENERAL SERVICE PUMPS	2	1	2.5	7	0.67	8	15.5	36-36	"	Lead wire
EMERGENCY BILGE PUMP AND SANITARY PUMP	1	1	25	7	2.13	45	63	50	"	armoured.
CIRC. SEA WATER PUMPS	2	1	70	19	2.16	100	124	57-53	"	"
NH3 COMPRESSOR (PROVISION)	1	1	16	7	1.70	37	48.7	37	"	"
CIRC. FRESH WATER PUMPS	1	1	50	19	1.83	85	98	45	"	"
NH3 COMPRESSOR (CARGO)	2	1	2.5	7	0.67	6	15.5	20-30	"	"
OIL PURIFIERS	2	1	16	7	1.70	40	48.7	80	"	"
FRESH WATER PUMP	1	1	16	7	1.70	15	15.5	45	"	"
ENGINE TURNING GEAR AIR BLOWER FOR DONKEY BOILER ENGINE REVERSING GEAR	1	1	2.5	7	0.67	15	15.5	45	"	"
LUBRICATING OIL PUMPS	2	1	150	37	2.27	195	205	77-70	"	"
OIL FUEL TRANSFER PUMP	1	1	16	7	1.70	30	48.7	18	"	"
WINDLASS	1	1	150	37	2.27	197	205	212	"	"
WINCHES, FORWARD	2	1	150	37	2.27	217	280	160	"	"
WINCHES, AFT	2	1	150	37	2.27	217	280	160	"	"
WINCHES, AFT	2	1	75	19	2.52	166	195	150	"	"
WINCHES, AFT	2	1	75	19	2.52	166	195	150	"	"
WINDING WINCH	1	1	70	19	2.16	110	123.7	178	"	"
LOW VENTILATING FANS FOR 45 HP MOTOR GENERATOR	1	1	16	7	1.70	9	48.7	120	"	"
WINDING WINCH	1	1	16	7	1.70	9	48.7	120	"	"
WORKSHOP MOTOR	1	1	6	7	1.05	14	28.6	42	"	"
VENTILATING FANS	1	1	2.5	7	0.67	10	15.5	20	"	"
UNINSULATED WINDING	1	1	2.5	7	0.67	6	15.5	26	"	"
STEER. WIND. - FORWARD	3	1	16	7	1.70	4	48.7	46	"	"
WINCHES	2	1	95	19	2.52	166	195	110	"	"
"	2	1	95	19	2.52	166	195	50	"	"
"	2	1	50	19	1.83	108	115	70	"	"
"	2	1	50	19	1.83	108	115	102	"	"
HYDRAPOR PUMPS	2	1	50	19	1.83	18	98	40	"	"
COOLING W. PUMPS (NH3 COND)	2	1	50	19	1.83	18	98	40	"	"

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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.

Dansk Elektricitetscompagni
Lynbyvej

Electrical Engineers.

Date 29-8-34.

COMPASSES.

Distance between electric ~~generators~~ or motors and standard compass 20'
 Distance between electric ~~generators~~ or motors and steering compass 16'
 The nearest cables to the compasses are as follows:—
 A cable carrying 8 Ampères 12 feet from standard compass 8 feet from steering compass.
 A cable carrying 6 Ampères 20 feet from standard compass 16 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.

PR. ODENSE STAALSKIBSVÆRFT
 VED A. P. MØLLER

John Møller Builder's Signature. Date 29-8-34

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 electric light and power installation as above described has been fitted in accordance with the Society's Rules, the approved plans and the requirements contained in the Secretary's letter of date 29/5/1934. The dimensions of the cables are as specified, the materials of good description throughout, and the workmanship of good quality.
 On completion the whole installation was tested as per Rules and found satisfactory.*

Noted
5/9/34
[Signature]

Total Capacity of Generators *273* Kilowatts.

The amount of Fee ... *14,858.48* When applied for, *3.9.34*
 Travelling Expenses (if any) £ : : *17.9.34* When received, *17*

Shiliff
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute **FRI. 14 SEP 1934**

Assigned *[Signature]*

2m. 31. — 1 m. 14. 1/2. The Surveyors are requested not to write on or between the space for Committee's Minute.

