

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

Date of writing Report 3/2 1939. When handed in at Local Office 9/2 1939 Port of **Gothenburg.**

No. in Survey held at **Gothenburg** Date, First Survey 8/12/38 Last Survey 31/1 1939.  
 Reg. Book. /Suppl./ (Number of Visits.....18.....)  
 90232 on the **M/S Trondheim** Tons {Gross 8257.82  
 Net 4950.97

Built at **Gothenburg** By whom built **Eriksbergs Mek. Verkst.** Yard No. 287 When built 1939  
 Owners **A/S Tank** Port belonging to **Oslo**

Electric Light Installation fitted by **Elektriska Aktiebolaget A E G** Contract No. When fitted 1939

Is the Vessel fitted for carrying Petroleum in bulk **yes**

System of Distribution **Two wires 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 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 main gen.**, 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 **on both sides in the engineroom**, 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 engineroom**

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 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 **yes, the change overfuses for steer. gear.**

For each generator: **A double pole circuit breaker with overload and reversed-current trips and a single-pole equaliser switch. For each outgoing circuit: two fuses and a double pole switch**

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 **hard wood** 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-meter fitted with commutator for both poles Switches, Circuit Breakers and Fusible Cut-outs, **yes** 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 and twin 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 yes Fall of Pressure, state maximum between bus bars and

any point of the installation under maximum load below allowance permitted 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 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, laundries, bathrooms and lavatories lead covered or run in conduit lead covered

Support and Protection of Cables, state how the cables are supported and protected supported by metal-clips. All power cables lead covered and armoured. Lightcables in cabin lead covered otherwise armoured or steel wireplaited

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

Joints in Cables, state if any, and how made, insulated, and protected Maincables are not jointed, sections-cable are jointed in porcelainboxes and boxes as per Rule.

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 of lead

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

yes 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 stakeholds 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 stowed in close proximity to them; if so, how are they protected in gastight tubing

Fittings

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

gastight fittings how are the cables led

in gastight tubing

where are the controlling switches situated outside dangerous spaces

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 whether fixed or portable 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, exkl. turning gear 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 None 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

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	1	82	220	373	400	Diesel engine	Diesel oil	above 150°F
AUXILIARY	1	12	220	54,5	500	Steam engine		
EMERGENCY	1	100	220	455	350	Diesel engine	Diesel oil	above 150°F
ROTARY TRANSFORMER	1	14	110	127	1380			

## GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole. Sq. mm.	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR	2	2x150	37	2,25	373	407	30	Rubber	Lead covered and steel
EQUALISER CONNECTIONS	2	2x150	37	2,25					
AUXILIARY GENERATOR	1	25	7	2,13	54,5	62,5	60	"	armoured
EMERGENCY GENERATOR	1	50	19	1,83	87,5	99,2	12	"	"
ROTARY TRANSFORMER	1	95	37	1,81	127	150	8	"	"
Main Generator	2	2x185	37	2,52	455	466,2	60	"	"
Equaliser	2	2x185	37	2,52			60	"	"
AUXILIARY SWITCHBOARDS									
Light distr. boards									
Forecastle	1	4	7	0,86	10	22,5	260	"	"
Midskips	1	16	7	1,71	35	48,1	180	"	"
Poop starboard	1	4	7	0,86	18	22,5	32	"	"
" port	1	4	7	0,86	18	23,5	50	"	"
ACCOMMODATION									
Navigation	1	4	7	0,86	5	22,5	190	"	"
Engine room	1	6	7	1,05	20	29,5	10	"	"
WIRELESS	1	16	7	1,71		48,1	180	"	"
SEARCHLIGHT	1	16	7	1,71		48,1	260	"	"
MASTHEAD LIGHT	1	1,5	1	1,5	1	9,3	240	"	"
SIDE LIGHTS	1	1,5	1	1,5	1	9,3	30	"	"
COMPASS LIGHTS	1	1,5	1	1,5	1	9,3	40	"	"
POOP LIGHTS	1	1,5	1	1,5	1	9,3	240	"	"
Heaters Lubr. oil	1	10	7	1,35	36	38,1	33	"	"
Heaters Fuel oil	1	25	7	2,13	55	62,5	80	"	"

## MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Nominal Area per Pole. Sq. mm.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	1	35	19	1,53	69,5	77,6	40	Rubber	Lead covered and steel armoured
MAIN BILGE LINE PUMPS										
GENERAL SERVICE PUMP										
Sanitary Pump	1	1	10	7	1,35	31,6	38,1	30	"	"
SEA WATER PUMPS										
Refrigerating	1	1	2,5	7	0,69	8,7	15,7	54	"	"
WATER PUMPS	1	1	10	7	1,25	28	38,1	55	"	"
Compressor	1	1	50	19	1,83	76	99,2	60	"	"
FRESH WATER PUMP	1	1	10	7	1,35	31,7	38,1	51	"	"
ENGINE TURNING GEAR										
ENGINE REVERSING GEAR	2	2	2x 95	37	1,81	228	300	24	"	"
LUBRICATING OIL PUMPS	1	1	10	7	1,25	29	38,1	50	"	"
OIL FUEL TRANSFER PUMP										
WINDLASS										
WINCHES, FORWARD										
WINCHES, AFT										
STEERING GEAR—										
(a) MOTOR GENERATOR	1	1	70	19	2,1	115	123	85	"	"
(b) MAIN MOTOR	1	1	2,5	7	0,67	8,5	15,7	20	"	"
WORKSHOP MOTOR	2	1	2,5	7	0,67	5,4	15,7	50	"	"
VENTILATING FANS										
Cool Water Pump	1	1	2,5	7	0,67	8,7	15,7	27	"	"
Lubr. Oil Pump	1	1	2,5	7	0,67	10	15,7	27	"	"
Fuel Oil Pump	2	1	2,5	7	0,67	10	15,7	37	"	"

© 2021

Lloyd's Register Foundation

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.

Electrical Engineers.

Date 3/2 1939

#### COMPASSES.

Minimum distance between electric generators or motors and standard compass about 8 metres (wireless motor generator)

Minimum distance between electric generators or motors and steering compass " 6 " " " "

The nearest cables to the compasses are as follows:—

A cable carrying 5 Amperes 12 feet from standard compass 12 feet from steering compass.

A cable carrying Amperes feet from standard compass 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 degrees on course in the case of the standard compass, and degrees on course in the case of the steering compass.

Eriksberg Mek. Verkstads Aktiebolag

Builder's Signature.

Date 7.2.39

Is this installation a duplicate of a previous case Yes If so, state name of vessel M/S "SOLÖR", Got. rpt. No. 11972.

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

The electric installation of this vessel has been fitted on board under our inspection and has been tested and found satisfactory.

The workmanship is good and the Rule requirements have been complied with.

Lloyd's certificate of the 100 kW. generator and the Makers' certificates in respect of the 82 kW. generator and of the motors for essential purposes are attached.

Makers certificate of the 12 kW. generator is also attached.

Noted  
L.F.  
21/2/39

Total Capacity of Generators 194 Kilowatts.

The amount of Fee /Got./ Kr. 726:— : 9/2 19 39.

Charged by Skm

Surv. 29.4.38

Travelling Expenses (if any) £

8:40

When applied for,

9/2 19 39.

When received.

8:40

G. Mandar. J. Aspelin  
Surveyors to Lloyd's Register of Shipping.

Committee's Minute

FRI. 24 FEB 1939

Assigned

See FE machy rpt



© 2021

Lloyd's Register  
Foundation