

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./ 90232 on the M/S Trondheim (Number of Visits 18)

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 engine room, 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 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 _____

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,

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 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 **Main cables are not jointed, sections-cable are jointed**

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

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 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 stowed in close proximity to them; if so, how are they protected **Lead covered and gastight**

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								
Main	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 AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole. Sq. Millim.	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									
ROTARY MOTOR	1	50	19	1,83	87,5	99,2	12	"	"
TRANSFORMER GENERATOR	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 AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Nominal Area per Pole. Sq. Millim.	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										
BILGE PUMP	1	1	10	7	1,35	31,6	38,1	30	"	"
SANITARY PUMP										
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	"	"
Refr.	1	1	50	19	1,83	76	99,2	60	"	"
COMPRESSOR	1	1	10	7	1,35	31,7	38,1	51	"	"
FRESH WATER PUMP										
ENGINE TURNING GEAR	1	1	10	7	1,35	31,7	38,1	51	"	"
ENGINE REVERSING GEAR										
and cool water	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	"	"

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.

Handwritten signature

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 Ampères 12 feet from standard compass 12 feet from steering compass.

A cable carrying Ampères feet from standard compass 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 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

Handwritten signature

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 " 61:60
 Travelling Expenses (if any) £ " 8:40
 Skm

When applied for, 9/2 19 39.

When received, 7/2/39

Handwritten signature
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 24 FEB 1939

Assigned

See FE machy rft

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



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