

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office FEB - 2 1939

Date of writing Report 21-1-1939 When handed in at Local Office 19 Port of Rotterdam.

No. in Survey held at Alblasserdam Date, First Survey 21-10-38 Last Survey 20-1-1939  
Reg. Book. on the m.s. SCOTTISH CO-OPERATOR (Number of Visits.....6.....) Tons { Gross 513.27  
Net 247.74

Built at Alblasserdam By whom built Messrs. "De Noord" Yard No. 574 When built 1938/1939

Owners Scottish Co-operative Wholesale Society Ltd. Port belonging to Leith

Electric Light Installation fitted by Messrs. A. de Haop. Contract No. When fitted 1938/1939

Is the Vessel fitted for carrying Petroleum in bulk no.

System of Distribution two conductor insulated system ✓

Pressure of supply for Lighting 220 ✓ volts, Heating 220 ✓ 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 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 ✓

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 in engineroom, starboardside and portside ✓, 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 engineroom, starboardside ✓

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 yes ✓, is all insulation of high dielectric strength and of permanently high insulation resistance yes ✓

is it of an approved type marble ✓, 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 no ✓

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches each main generator: a triple pole contactor with overload & rev. current trips - Aux. generator: a triple pole change over switch & 3 fuses - battery circuit: a 5 pole change over switch & 4 fuses - each outgoing circuit: a double pole switch & double pole fuses. ✓

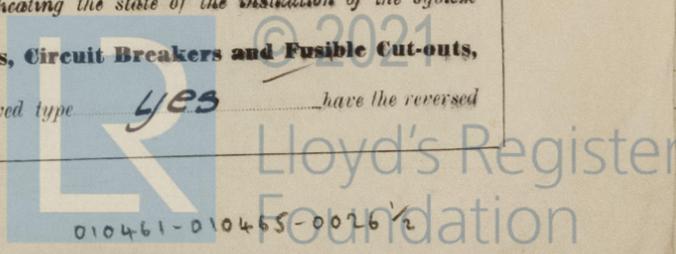
Are turbine driven generators fitted with emergency trip switch as per rule ✓ Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material yes ✓

Instruments on main switchboard 5 ✓ ammeters 3 ✓

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 one pair of earthfault indicating lamps ✓

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 all types are the cables insulated and protected as per Tables IV, V, X, XI, XII or XIII of the Rules yes  
(echo sounding app.)

If the cables are insulated otherwise than as per Rule, are they of an approved type ✓ **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load 3 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 ✓, 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 no if so, are they adequately protected ✓

Are cables in machinery spaces, galleys, lavatories, bathrooms and lavatories lead covered or run in conduit yes  
**Support and Protection of Cables**, state how the cables are supported and protected cables are clipped to metal trays or direct to steelwork or wood work of vessel by metal 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 no If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII yes  
(lead covered cables)

**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 none

**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 Leadsheath & steelwirebraiding of cables and all apparatus earthed where necessary to Rule requirements. 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 by a battery in two compartments on boat-deck - controlling change over-switch and fuses are mounted on main switchboard.

**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 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 one fitting with cast-on guards is in rope store under fore-castle space are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected ✓ how are the cables led ✓

where are the controlling switches situated ✓

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 none 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 (except motor-generator of wireless transmitter) are they protected from mechanical injury and damage from water, steam or oil yes are their axes of rotation fore and aft yes (where possible) 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 (wireless motor-generator is totally enclosed), 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 ✓ 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 steel masts. 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 ✓ are all fuses of the filled cartridge type ✓ are they of an approved type ✓ 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.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	35	220	160	1300	Oil engine	diesel oil	above 150°F
AUXILIARY	1	7.5	220	34	1300	"	"	"
EMERGENCY								
ROTARY TRANSFORMER								

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. mm.	No.	Diameter mm.	In Circuit.	Rule.			
MAIN GENERATOR	1	120	37	2.03	160	175	110 - 55	rubber	Leadsheath & Steelwirebraiding.
EQUALISER CONNECTIONS	1	35	19	1.53		70	55 - 28	"	"
AUXILIARY GENERATOR	1	10	7	1.35	34	38	100	"	"
EMERGENCY GENERATOR	1	6	7	1.05	20	29	125	"	"
ROTARY TRANSFORMER									
ENGINE ROOM (2 circuits)	1	1.5	1	1.39	1	9.5	90	"	"
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
Navigation board	1	2.5	1	1.79	1	15.5	280	"	"
Airheaters dist. brd.	1	25	7	2.13	62	63	250	"	"
Deck mach. foreship	1	35	19	1.53	87	85 1/4 hr.	370	"	"
Refrig. mach. (comp. pump)	1	2.5	1	1.79	13.4	15.5	66	"	"
" " (control circ.)	1	2.5	1	1.79	2	15.5	66	"	"
ACCOMMODATION									
Lighting midship	1	2.5	1	1.79		15.5	250	"	"
Lighting aft	1	2.5	1	1.79	7	15.5	75	"	"
WIRELESS	1	2.5	1	1.79	15	15.5	300	"	"
SEARCHLIGHT									
MASTHEAD LIGHT	1	1.5	1	1.39	2	9.5	180 190	"	"
SIDE LIGHTS	1	1.5	1	1.39	2	9.5	40	"	"
COMPASS LIGHTS	1	1.5	1	1.39	0.08	9.5	150	"	"
POOP LIGHTS	1	1.5	1	1.39	2	9.5	305	"	"
CARGO LIGHTS	1	1.5	1	1.39	3.5	9.5	100	"	"
HEATERS	1	1.5	1	1.39	3.5	9.5	65	"	Lead covering.

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. mm.	No.	Diameter mm.	In Circuit.	Rule.			
BALLAST PUMP	1	1	35	19	1.53	56.5	78	85	rubber	Leadsheath & steelwirebraiding
MAIN BILGE LINE PUMPS	1	1	35	19	1.53	56.5	78	85	"	"
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP										
SANITARY PUMP	1	1	2.5	1	1.79	8.3	15.5	165	"	"
CIRC. SEA WATER PUMPS										
CIRC. FRESH WATER PUMPS										
AIR COMPRESSOR	1	1	25	7	2.13	48	63	85	"	"
FRESH WATER PUMP	1	1	2.5	1	1.79	8.3	15.5	140	"	"
ENGINE TURNING GEAR										
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS	1	1	2.5	1	1.79	8.3	15.5	60	"	"
OIL FUEL TRANSFER PUMP	1	1	2.5	1	1.79	8.3	15.5	145	"	"
WINDLASS	1	1	16	7	1.71	53	50 1/4 hr.	25	"	"
WINCHES, FORWARD	1	1	35	19	1.53	87	85 1/4 hr.	110	"	"
Capstan	1	1	10	7	1.35	35.5	30 1/4 hr.	125	"	"
WINCHES, AFT	1	1	35	19	1.53	87	85 1/4 hr.	140	"	"
STEERING GEAR										
(a) MOTOR GENERATOR										
(b) MAIN MOTOR	1	1	4	7	0.86	17.5	22.5	120	"	"
WORKSHOP MOTOR										
VENTILATING FANS										
Oil separators	2	1	1.5	1	1.39	3	9.5	45	"	"
Oil heaters	2	1	2.5	1	1.79	13.5	15.5	48	"	"
Refrig. compressor	1	1	2.5	1	1.79	8.6	15.5	25	"	"
Refrig. cooling w. pump	1	1	2.5	1	1.79	4.75	15.5	65	"	"
Refrig. ventilator	1	1	2.5	1	1.79	2	15.5	55	"	"

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.

**N.V. ELECTROTECHNISCH BUREAU  
 A. DE HOOP**

Electrical Engineers.

Date 27/1 '39

**COMPASSES.**

Minimum distance between electric generators or motors and standard compass 12 feet (motor generator of wireless transmitter).

Minimum distance between electric generators or motors and steering compass 8 feet ( " " " " " ).

The nearest cables to the compasses are as follows:—

A cable carrying .00 Ampères 1 feet from standard compass 1 feet from steering compass. (Compass lights)

A cable carrying .2 Ampères 4 feet from standard compass 2 feet from steering compass. (wheelhouse lighting).

A cable carrying 15 Ampères 12 feet from standard compass 8 feet from steering compass. (wireless transmitter)

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 nihil degrees on every course in the case of the standard

compass, and nihil degrees on every course in the case of the steering compass.

*[Handwritten signature]*  
 N.V. Industriële Maatschappij, DE NOORD

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 electrical equipment of this vessel has been fitted on board under special survey, tested under full working conditions and found satisfactory. The material and workmanship are good and the installation merits in my opinion the Committee's approval.*

*Noted  
 S.Y.  
 6/2/39*

Total Capacity of Generators 77.5 Kilowatts.

The amount of Fee ... £ 363,00 : 31.1.1939

Travelling Expenses (if any) £ 11,00 : 15.2.1939

*[Handwritten signature]*  
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE 21 FEB 1939

Assigned

*See Rot. J.C. 29793*

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



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