

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

APR 22 1940

Received at London Office

Date of writing Report 18th April 1940 When handed in at Local Office 19th April 1940 Port of Leith

No. in Survey held at Leith Date, First Survey 5th March Last Survey 12th April 1940.
Reg. Book. (Number of Visits... 13)

17634 on the Turin Screw Motor Jug "M.S.C. MERLIN" Tons } Gross 131.0
Net ✓

Built at Leith By whom built Henry Robb Ltd Yard No. 295 When built 1940

Owners The Manchester Ship Canal Co. Port belonging to Manchester

Electric Light Installation fitted by Henry Robb Ltd Contract No. ✓ When fitted 1940

Is the Vessel fitted for carrying Petroleum in bulk No

System of Distribution Two wise parallel

Pressure of supply for Lighting 110 volts, Heating ✓ volts, Power 110 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 No, 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 Engine Room forward - one port, one starboard, 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 No woodwork near

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 At the forward end of Engine Room between the two generators 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 No woodwork near

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 yes, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework ✓, is the non-hygroscopic insulating material of an approved type ✓, 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

D.P. Main Switch & D.P. fuses for each generator. D.P. Switches & fuses to each outgoing circuit

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 ✓

Instruments on main switchboard two ammeters two voltmeters ✓ synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection ✓

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system Earth lamps & switches 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 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* 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 **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load *1.5* **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 .

Support and Protection of Cables, state how the cables are supported and protected *Run in conduit. In accommodation - saddled & clipped. Remainder of wiring carried in conduit.*

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, are the cables and fittings in accordance with the special requirements .

Joints in Cables, state if any, and how made, insulated, and protected *By porcelain connectors in joint boxes.*

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 *Sheathing of all cables bonded & earthed.* 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 .

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 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 *No*, how are the cables led .

where are the controlling switches situated are all fittings suitably ventilated , are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials .

Heating and Cooking Appliances, are they constructed and fitted as per Rule , are air heaters constructed and fitted as per Rule .

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*, are they protected from mechanical injury and damage from water, steam or oil *yes*, are their axes of rotation fore and aft *yes except steering gear which is thwartship.* 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 , if not of this type, state distance of the combustible material horizontally or vertically above the motors *No woodwork near*, 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 *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 are all fuses of the fitted 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 are they suitably stored in dry situations .

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 ...	<i>Two</i>	<i>Each 12.5</i>	<i>110</i>	<i>114</i>	<i>1000</i>	<i>Crossley Diesel Engine</i>	<i>Diesel Oil</i>	<i>Above 150° F</i>
AUXILIARY ...						<i>Mech. Rpt No 9882</i>		
EMERGENCY ...								
ROTARY TRANSFORMER								

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. Ins.	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR ...	<i>1</i>	<i>1</i>	<i>19</i>	<i>.083</i>	<i>114</i>	<i>118</i>	<i>40</i>	<i>V.I.R.</i>	<i>In conduit.</i>
EQUALISER CONNECTIONS ...									
AUXILIARY GENERATOR ...									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER } MOTOR									
ENGINE ROOM ...									
BOILER ROOM ...									
AUXILIARY SWITCHBOARDS ...									
<i>Lighting in Eng. Room & Accommodation</i>	<i>1</i>	<i>.003</i>	<i>3</i>	<i>.036</i>	<i>3.8</i>	<i>12</i>	<i>9</i>	<i>V.I.R.</i>	<i>In conduit.</i>
ACCOMMODATION ...									
WIRELESS ...									
SEARCHLIGHT ...									
MASTHEAD LIGHT ...	<i>1</i>	<i>.002</i>	<i>3</i>	<i>.029</i>	<i>.36</i>	<i>7.8</i>	<i>80</i>	<i>V.I.R.</i>	<i>In conduit</i>
SIDE LIGHTS ...	<i>1</i>	<i>.002</i>	<i>3</i>	<i>.029</i>	<i>.36</i>	<i>7.8</i>	<i>28</i>	<i>"</i>	<i>"</i>
COMPASS LIGHTS ...									
POOP LIGHTS ...									
CARGO LIGHTS ...									
HEATERS ...									

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. Ins.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP ...										
MAIN BILGE LINE PUMPS ...	<i>1</i>	<i>1</i>	<i>.0225</i>	<i>7</i>	<i>.064</i>	<i>41</i>	<i>46</i>	<i>60</i>	<i>V.I.R.</i>	<i>In conduit</i>
GENERAL SERVICE PUMP ...										
EMERGENCY BILGE PUMP ...										
SANITARY PUMP ...										
CIRC. SEA WATER PUMPS ...										
CIRC. FRESH WATER PUMPS...										
AIR COMPRESSOR ...										
FRESH WATER PUMP ...										
ENGINE TURNING GEAR...										
ENGINE REVERSING GEAR ...										
LUBRICATING OIL PUMPS ...										
OIL FUEL TRANSFER PUMP ...	<i>1</i>	<i>1</i>	<i>.003</i>	<i>3</i>	<i>.036</i>	<i>11.2</i>	<i>12</i>	<i>120</i>	<i>V.I.R.</i>	<i>In conduit.</i>
WINDLASS ...										
WINCHES, FORWARD ...										
WINCHES, AFT ...										
STEERING GEAR—										
(a) MOTOR GENERATOR ...										
(b) MAIN MOTOR ...	<i>1</i>	<i>1</i>	<i>.0145</i>	<i>7</i>	<i>.052</i>	<i>36</i>	<i>37</i>	<i>60</i>	<i>V.I.R.</i>	<i>In conduit.</i>
WORKSHOP MOTOR ...										
VENTILATING FANS ...										
<i>Stream line filter</i>	<i>1</i>	<i>1</i>	<i>.007</i>	<i>7</i>	<i>.036</i>	<i>9.52</i>	<i>24</i>	<i>50</i>	<i>V.I.R.</i>	<i>In conduit.</i>

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.

Henry Robb Ltd & Co Electrical Engineers. Date 18/4/40

COMPASSES.

Minimum distance between electric generators or motors and standard compass ✓
 Minimum distance between electric generators or ~~motors~~ and steering compass 20 ft. (Temporary compass for voyage to Manchester)
 The nearest cables to the compasses are as follows:—
 A cable carrying 36 Amperes ✓ feet from standard compass 6 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 nil degrees on all course in the case of the steering compass.

Henry Robb Ltd & Co Builder's Signature. Date 18/4/40

Is this installation a duplicate of a previous case yes If so, state name of vessel "M.S.C. Mallard"

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

The Diesel-driven Generators - Inch. Rpt N° 9882 - have been efficiently fitted on board in accordance with the Rules, the materials & workmanship being sound & good.

The wiring of the vessel has been carried out in a satisfactory manner, & in accordance with the approved plans. On completion the whole installation was tried out under full load & working conditions, & it was found satisfactory in all respects.

Noted
R.L.Y.
 ✓ 24/4/40.

Total Capacity of Generators 25 Kilowatts.

The amount of Fee	£ 20 : 0 : 0	When applied for,	16/4/1940
4/5 th of £16.0.0	}	When received,	25/4/40
1/5 th of £4.0.0			
Travelling Expenses (if any) £	:	:	

John Houston
 Surveyor to Lloyd's Register of Shipping.

FRI 26 APR 1940

Committee's Minute

Assigned

See Lth. No 20073

2m. 12.38.—Transfer. The Surveyors are requested not to write on or below the space for Committee's Minute



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