

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

123 DEC 1943

Received at London Office

Date of writing Report.....19..... When handed in at Local Office.....19..... Port of Liverpool

No. in Survey held at Birkenhead Date, First Survey 31/8/43 Last Survey 25/11/43  
Reg. Book. (Number of Visits.....14.....)

37320 on the M.A.C. "EMPIRE MAC COLL" Tons { Gross 9133  
Net 4830

Built at Birkenhead By whom built Cannell Laird & Co. Ltd Yard No. 1106 When built 1943

Owners M.O.W.T. (British Tankers Co. Ltd) Port belonging to.....

Electrical Installation fitted by The Sunderland Forge & Eng. Co. Ltd Contract No. 1106 When fitted.....

Is vessel fitted for carrying Petroleum in bulk Yes Is vessel equipped with D.F. Yes E.S.D. Yes Gy.C. Yes Sub.Sig. No

Have plans been submitted and approved Yes System of Distribution Two wire Voltage of supply for Lighting 110

Heating 110 Power 110 Direct or Alternating Current, Lighting D.C. Power D.C. If Alternating Current state periodicity..... Prime Movers,

has the governing been tested and found as per Rule when full load is suddenly thrown on and off Yes Are turbine emergency governors fitted with a

trip switch as per Rule..... Generators, are they compound wound Yes, are they level compounded under working conditions Yes,

if not compound wound state distance between generators..... and from switchboard..... Where more than one generator is fitted are they

arranged to run in parallel Yes, are shunt field regulators provided Yes Is the compound winding connected to the negative or positive pole

positive (Admiralty Regs) Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing..... Have certificates of

test for machines under 100 kw. been supplied Yes and the results found as per rule Yes Are the lubricating arrangements and the construction

of the generators as per rule Yes Position of Generators 2 Generators on Generator flat, starboard side of Eng. Rm. One

generator on upper flat of engine room port side. is the ventilation in way of generators satisfactory Yes are they clear of inflammable material Yes, if situated

near unprotected combustible material state distance from same horizontally..... and vertically..... are the generators protected from mechanical

injury and damage from water, steam and oil Yes, are the bedplates and frames earthed Yes and the prime movers and generators in metallic

contact Yes Switchboards, where are main switchboards placed On Generator flat adjacent to 2 Generators.

are they in accessible positions, free from inflammable gases and acid fumes Yes, are they protected from mechanical injury and damage from water, steam

and oil Yes, if situated near unprotected combustible material state distance from same horizontally..... and vertically..... what insulation

material is used for the panels Shidamyo, if of synthetic insulating material is it an Approved Type Yes, if of

semi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule..... Is the frame effectually earthed Yes

Is the construction as per Rule Yes, including accessibility of parts Yes, absence of fuses on the back of the board Yes, individual fuses

to pilot and earth lamps, voltmeters, etc. Yes locking of screws and nuts Yes, labelling of apparatus and fuses Yes, fuses on the "dead"

side of switches Yes Description of Main Switchgear for each generator and arrangement of equaliser switches Double pole 350 amp.

Circuit breakers (one pole equaliser) fitted with method, reverse current No 10-100. 10/100 -

Admiralty Pattern shock proof.

and for each outgoing circuit Double pole switch fuses.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard 3.

ammeters 3 voltmeters..... synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the

equaliser connection Yes Earth Testing, state means provided Earth Lamps.

Switches, Circuit Breakers and Fuses, are they as per Rule Yes, are the fuses an approved type Yes, are all fuses labelled as

per Rule Yes If circuit breakers are provided for the generators, at what overload current did they open when tested 320 amp. are the reversed current

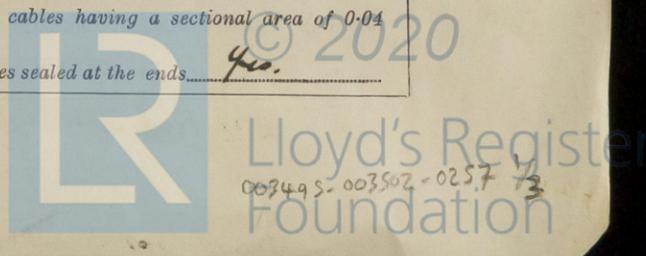
protection devices connected on the pole opposite to the equaliser connection Yes, have they been tested under working conditions, and at what current

did they operate 45/60 amp. Joint Boxes, Section Boards and Distribution Boards, is the construction and position as per Rule Yes

Cables, are they insulated and protected as per the appropriate Tables of the Rules Yes, if otherwise than as per Rule are they of an approved type #

state maximum fall of pressure between bus bars and any point under maximum load 5.5 volts, are the ends of all cables having a sectional area of 0.04

square inch and above provided with soldering sockets Yes Are paper insulated and varnished cambric insulated cables sealed at the ends Yes



with insulating compound..... or waterproof insulating tape..... Yes. Are all the cable runs in accessible positions, not exposed to drip or accumulation of water or oil, high temperatures or 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, laundries, etc., lead covered..... Yes or run in conduit..... State how the cables are supported and protected..... Main cables run on fore & aft gangway, in pipes (V.C.L.C.A) Machinery Spaces L.C.A - L.C. Clipped to steel beams. Accommodation sub-circuit. V.C.L.C. clipped (250 Volt V.C. cables used for dec. sub circuits, installed and sealed in a satisfactory manner)

Are all lead sheaths, armouring and conduits effectually bonded and earthed..... Yes. Refrigerated chambers, are the cables and fittings as per Rule..... Yes

Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands..... Yes, where unarmoured cables pass through beams, etc., are the holes effectively bushed..... Yes and with what material..... Lead. Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule..... Yes. Emergency Supply, state position..... and method of control.....

Navigation Lamps, are they separately wired..... Yes controlled by separate double pole switches..... Yes and fuses..... Yes. Are the switches and fuses in a position accessible only to the officers on watch..... Yes, is an automatic indicator fitted..... Yes. Secondary Batteries, are they constructed and fitted as per Rule..... Yes, are they adequately ventilated..... Yes what is the battery capacity in ampere hours..... 60 amp-hours.

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof..... Yes. Are fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present..... Yes, if so, how are they protected..... by flameproof enclosures or special A.P. magazine fittings

and where are the controlling switches fitted..... outside of spaces. are all fittings suitably ventilated..... Yes, are all fittings and accessories constructed and installed as per Rule..... Yes. Searchlight Lamps, No. of..... 2, whether fixed or portable..... portable, are their fittings as per Rule..... Yes. Heating and Cooking, is the general construction as per Rule..... are the frames effectually earthed..... are heaters in the accommodation of the convection type..... Motors, are all motors constructed and installed as per Rule..... Yes and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water, steam and oil..... Yes, if situated near unprotected combustible material state minimum distance from same horizontally..... and vertically..... Are motors coupled to oil fuel transfer and unit pressure pumps capable of being stopped from a position accessible in the event of fire in the pump compartment..... Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing..... Have certificates of test for motors under 100 BHP intended for essential services been supplied and the results found as per Rule..... Yes. Control Gear and Resistances, are they constructed and fitted as per Rule..... Yes. Lightning Conductors, where required are they fitted as per Rule..... Yes. Ships carrying Oil having a Flash Point less than 150° F. - Have all the special requirements of the Rules for such ships been complied with..... Yes, are all fuses of the cartridge type..... Yes are they of an approved type..... Yes. Are the fittings for pump rooms, 'tween deck spaces, etc., in accordance with the special requirements for such ships..... Yes. Are the cables lead covered as per Rule..... Yes. Spare Gear, if the vessel is for open sea service have spares been provided as per Rule..... Yes, are they suitably stored in dry situations..... Yes. Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory..... Yes.

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATORS	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 (3)	2	35	110	318	600	Steam Engines		
	1	35	110	318	550		do. (Supplied by Admiralty Maker - Westland Eng Co. Alton; Compound wound; Class 2 Rating; Serial No. 5X 21/22.	
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR CABLES.

DESCRIPTION.	KILOWATTS.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
		No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
2 MAIN GENERATORS	35	2	120	318	382	40	V.C.	L.C.
" " EQUALISER		1	10	-	191	20	"	"
1 " " (Admiralty Supply)	35	2	120	318	382	120	"	"
" " Equaliser		2	120	-	382	60	"	"
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
" " GENERATOR								



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Rpt. 9a.

Port of

Continuation of Report No.

dated

on the

LIGHTING AND HEATING CABLES (CONT'D)

Engine Room Post Lower DB.	D14.	1	'01	11	42	100	V.C.	LCAB
" " Star " DB.	D15	1	'01	11	42	50	"	"
" " Post Upper DB.	D16	1	'01	11	42	120	"	"
" " Star " DB.	D17.	1	'01	11	42	40	"	"
Galley DB.	D18.	1	'01	23	42	160	"	LC. & LCAB.
Post Flight Deck aft Combinations DB.	D19.	1	'0225	13.7	75	60	"	LC
Star " " " " DB.	D20.	1	'0225	13.7	75	30	"	"
Star Forecastle DB.	D21.	1	'01.	12	42	30	"	"
Post " DB	D22.	1	'01.	9	42	50	"	"
10" Signalling Projector		1	AP.6192	19	31.	150	Rehler.	"
D.C. main.		1	0.1.	138	191	20	V.C.	"

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Subst		1	5	1	'0225	41	75	130	"	LC
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MAIN DISTRIBUTION CABLES.

DESCRIPTION.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
	No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
AUX. SWITCHBOARDS AND SECTION BOARDS ...							
Midships Section Panel 51. Main	1	.20 <sup>Max 227</sup>	276	296	450	VC.	L.C.A. & pipe
" " Alternative	1	.20	"	"	"	"	"
Upper Bridge Lighting Sect. Box. 52.	1	.06	107	135	60	"	L.C.
Forecastle Section Board 53.	1	.06	53.5	135	320	"	L.C.A. & Pipe
Bridge Lighting " " 54.	1	.06	53	135	20	"	L.C.
Off Lighting " " 55.	1	.06	99	135	100	"	L.C.A.
Off Vent Fans " " 56.	1	.06	101	135	150	"	"
Engine Room Lighting " " 57.	1	.06	50	135	30	"	"
Eng. Room Auxiliaries " " 58.	1	.06	60.6	135	40	"	"
Aircraft Workshop " " 59.	1	.0225	28.3	75	120	"	"
Shore Connection Box.	1	.20.	273	296	100.	"	"

LIGHTING AND HEATING, ETC., CABLES.

DESCRIPTION.	No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.	APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
WIRELESS Main	1	.0225	35	75	130	V.C.	L.C.
" Emergency from Sect. Box 56	1	.003	5	10	80	"	"
NAVIGATION LIGHTS Main Supply D.B. D1.	1	.003	1.5	10	300	"	"
" Alternative Supply D.B. D2.	1	.003	1.5	10	30	"	"
LIGHTING AND HEATING Bridge etc. D.B. D2.	1	.01	12	42	120	"	"
Upper Bridge Deck Post off D.B. (D3A)	1	.01	13	42	30	"	"
" " " " (D4A)	1	.01	28	42	50	"	"
" " " " Post for D.B. (D3. Loop)	1	.01	13.5	42	80	"	"
" " " " Stas for D.B. (D4)	1	.01	28.5	42	80	"	"
Bridge Deck Post Lighting D.B. D5	1	.01	13	42	90	"	"
Saloon Post Lighting D.B. (D6 Loop)	1	.01	29	42	80	"	"
" " " " Stas " D.B. (D6A)	1	.01	14	42	50	"	"
Bridge Deck Stas Lighting D.B. D7	1	.01	11	42	70	"	"
Floodlight & Decklight D.B. D8	1	.01	13.4	42	120	"	"
Prop Deck Lighting D.B. D9	1	.01	11	42	30	"	"
Main Deck Post off D.B. D10.	1	.01	15	42	140	"	"
" " " " Stas " D.B. D11	1	.01	14	42	70	"	"
Off Connection Boxes D.B. D12	1	.01	4	42	30	"	"
Aircraft Workshop D.B. D13.	-	-	-	-	-	"	"
(Sect. Box 59 = D.B. 13. are combined Sect. Box)							

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.	No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.	APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
Oil Fuel Pumps	1	2	1	.01	17.2	42	80	VC.	L.C.A.B
Lub. Oil "	1	2	1	.01	17.2	42	60	"	"
Engine Starting Motor	1	10	1	.06	80	135	100	"	L.C.A.
Workshop Motor.	1	3	1	.01	25	42	120	"	L.C.A.B
24" Eng. Room Vent Fans	4	1.5	1	.01	15	42	80	"	L.C.A.
16" Boiler Room Fan	1	0.75	1	.003	8	10	100	Rubber	L.C.A.B.
Ace. Vent Fans off.	1	4	1	.0225	33	75	80	VC	L.C.A.
" " " " Midship	1	5	1	.0225	41	75	130	"	L.C.
" " " " " "	1	4	1	.0225	33	75	150	"	"
" " " " " "	1	2.25	1	.01	20	42	80	"	"
Ammunition Motor.	1	4	1	.0225	28	75	60	"	"
Artificial Gas Compressor Motor	1	12	1	.06	96	135	120	"	L.C.A.
Aircraft Workshop Battery Charging Motor	1	2	1	.01	18	42	60	"	L.C.
Galley Compressor Motor	3	0.35	1	.003	4	10	30	Rubber	"
R/D Vent Fan Motor	1	0.18	1	.003	2	10	100	"	"
Aircraft Battery Charging Room Fan	1	0.03	1	.003	0.34	10	90.	"	"

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The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.

All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.

The foregoing is a correct description.

Per Pro THE SUNDERLAND FORGE & ENG. Co, LTD.

*J. Williamson*

Electrical Engineers.

Date 8<sup>th</sup> Dec. 1943.

COMPASSES.

Minimum distance between electric generators or motors and standard compass 244 ft

Minimum distance between electric generators or motors and steering compass 240 ft.

The nearest cables to the compasses are as follows:—

A cable carrying 12 Ampères 15 feet from standard compass 10 feet from steering compass.

A cable carrying 0.1 Ampères 6 feet from standard compass between feet from steering compass.

A cable carrying 0.1 Ampères between feet from standard compass 4 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 1/2 degrees on any course in the case of the standard compass, and 1/2 degrees on any course in the case of the steering compass.

FOR AND ON BEHALF OF  
**CAMMELL LAIRD & CO. LIMITED.**

*J. Williamson*

Builder's Signature.

Date 9.12.43.

Is this installation a duplicate of a previous case No. If so, state name of vessel \_\_\_\_\_

Plans. Are approved plans forwarded herewith Yes If not, state date of approval \_\_\_\_\_

Certificates. Are certificates of test for motors engaged on essential services and generators forwarded herewith Yes.

General Remarks (State quality of workmanship, whether insulation tests, etc., have been made, opinions as to class, etc.) The electrical equipment

of this vessel (with the exception of the flight deck installation, one generator and several other units installed under Admiralty supervision) has been fitted on board under special survey and in accordance with the Society's Rules, Admiralty requirements, approved plans & Secretary's letter. The equipment has been tested under full load and working conditions and found satisfactory. The materials and workmanship are good.

The position of the electrical equipment fitted under Admiralty supervision and tested and accepted by them has been examined. In my opinion it has been installed in a satisfactory manner and is such as would meet the favourable consideration of the Committee.

Total Capacity of Generators 105 Kilowatts.

The amount of Fee ... £ 33 : 0 : 0 When applied for, 15 DEC 1943

Travelling Expenses (if any) £ : : When received. 19.....

*H. Stappert*

Surveyor to Lloyd's Register of Shipping.

Committee's Minute LIVERPOOL 21 DEC 1943

Assigned See Minute on Liverpool H. Machinery Report

5m.4.39.—Transfer. (MADE AND PRINTED IN ENGLAND.)  
(The Surveyors are requested not to write on or below the space for Committee's Minute.)



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