

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

28 DEC 1943

Received at London Office.....

Date of writing Report..... 20 DEC 1943 When handed in at Local Office..... 20 DEC 1943 Port of NEWCASTLE - ON - TYNE.

No. in Survey held at WALKER - ON - TYNE Date, First Survey 27-5-43 Last Survey 30-11-1943  
Reg. Book. (Number of Visits.....)

on the M. A. C. EMPIRE MAC CABE. Tons {Gross. 9249  
Net. 4993

Built at WALKER - ON - TYNE By whom built SWAN HUNTER & Wigham Richardson and No. 1726 When built 1943

Owners MINISTRY OF WAR TRANSPORT. Port belonging to BRITISH.

Electrical Installation fitted by CAMPBELL & ISHERWOOD LTD. Contract No. 1726 When fitted 1943

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. -

Have plans been submitted and approved YES System of Distribution TWO WIRE Voltage of supply for Lighting 110

Heating - 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 NO, are shunt field regulators provided YES Is the compound winding connected to the negative or positive pole

NEGATIVE 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 ENGINE ROOM STBD. OUT AND INBOARD "A" ON GALLERY OVER

MAIN SHAFT. AFT. 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 ENGINE ROOM STBD. ON GALLERY.

AUXILIARY SWITCHBOARDS ON BRIDGE DECK IN ACCOMMODATION

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 -, 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 300 AMP. DOUBLE POLE

CIRCUIT BREAKERS WITH OVERLOAD, NO VOLT, AND REVERSE CURRENT TRIPS.

400 AMP. AS ABOVE.

and for each outgoing circuit DOUBLE POLE, DOUBLE THROW, Q.B. SWITCHES AND DOUBLE POLE "Z" 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 CONNECTED TO "E" THROUGH SWITCHES AND FUSES.

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 10%, are the reversed current

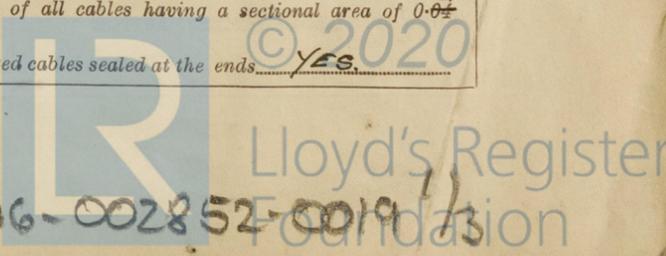
protection devices connected on the pole opposite to the equaliser connection -, have they been tested under working conditions, and at what current

did they operate - 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 4.4V, are the ends of all cables having a sectional area of 0.07

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 YES or waterproof insulating tape —. 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 LEAD COVERED ARMOUR AND BRAIDED CABLES CLIPPED TO PERFORATED TRAY PLATES.  
LEAD COVERED CABLES CLIPPED TO PERFORATED TRAY PLATES, AND TO WOOD GROUNDS IN ACCOMMODATION.  
PIROTEMAX CABLES CLIPPED TO TRAY PLATES FOR STEER AND MAST LIGHTS AND ALL ADMTY. LOW POWER MAINS.  
 Are all lead sheaths, armouring and conduits effectually bonded and earthed YES. Refrigerated chambers, are the cables and fittings as per Rule —.  
 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 AND BRASS BUSHES. 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 —, are they adequately ventilated —  
— what is the battery capacity in ampere 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 —, if so, how are they protected —  
— and where are the controlling switches fitted —, are all fittings suitably ventilated YES,  
 are all fittings and accessories constructed and installed as per Rule YES. Searchlight Lamps, No. of —, whether fixed or portable —  
—, are their fittings as per Rule —. Heating and Cooking, is the general construction as per Rule YES,  
 are the frames effectually earthed YES, are heaters in the accommodation of the convection type YES. 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 —. Control Gear and Resistances, are they constructed and fitted as per Rule YES. Lightning Conductors, where required are they fitted as per Rule —. 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 —, are all fuses of the cartridge type —  
 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 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 ... ..	2	30	110	273	600	STEAM ENGINE.		
	1	35	110	320	650	" "	ADMIRALTY SUPPLY.	
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.			
MAIN GENERATOR ... ..	2 x 30	1	84/103	273	385	30/30	Y.C.	L.C.A+B.
" " EQUALISER ... ..	35	1	34/103	320	385	90	Y.C.	L.C.A+B.
EMERGENCY GENERATOR ... ..								
ROTARY TRANSFORMER: MOTOR ... ..								
" " GENERATOR ... ..								

FORD UPPER BIDGE DECK	PORT LIGHTING	1	7/044	4	31	66	V.I.R.	L.C.
AFT BRIDGE DECK STBD		1	7/044	10	31 ✓	102	V.I.R.	L.C.
CARGO CONNECTION BOXES		1	7/044	12	31 ✓	30	V.I.R.	L.C.
BRIDGE SPACE LIGHTING		1	7/044	8	31 ✓	24	V.I.R.	L.C.
FORD STORE AND		1	7/044	12	31 ✓	268	V.I.R.	L.C.
EMERGENCY WIRELESS		1	7/064	35	46.75	138	Y.C.	L.C. A+B
ECHOMETER		1	7/036		24 ✓	148	V.I.R.	L.C.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE

N. P.H.P.

002846-002852-0019<sup>2</sup>/<sub>13</sub>

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 ...							
AUXILIARY SWITCHBOARD MIDSHIPS	1	34/083	140	296 ✓	426	V.C.	L.C.A+B
AFT LIGHTING SECTION BOX	1	19/064	60	135 ✓	102	V.C.	L.C.A+B.
ENGINE ROOM " "	1	4/064	22	45 ✓	132	V.C.	L.C.A+B
AUXILIARY SWITCHBOARD MIDSHIPS	1	34/083		296 ✓	648	V.C.	L.C.A+B
A/C WORKSHOP	1	4/064		45 ✓	184	V.C.	L.C.A+B.
"	1	4/064		45 ✓	184	V.C.	L.C.A+B.
ORLIKONS PORT AND STBD.	1	4/044		31 ✓	276	V.I.R.	L.C.

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS ...	1	4/064	35	75 ✓	148	V.C.	L.C.A+B
NAVIGATION LIGHTS ...	1	4/044	2.5	31 ✓	224	V.I.R.	L.C.
LIGHTING AND HEATING ...	ALTERNATE SUPPLY FROM SALOON DISTRIBUTION BOARD.						
A/C WORKSHOP LIGHTING	1	4/044	2	42 ✓	82	V.C.	L.C+B.
POOP DECK " PORT	1	4/044	12	42 ✓	96	V.C.	L.C+B.
POOP DECK " STBD.	1	4/044	12	42 ✓	80	V.C.	L.C+B.
UPPER DECK " PORT	1	4/044	16	42 ✓	72	V.C.	L.C+B.
UPPER DECK " STBD	1	4/044	16	42 ✓	48	V.C.	L.C+B.
POOP DECK " STBD	1	4/044	6	42 ✓	170	V.C.	L.C+B.
SUPPLY TO FLIGHT DECK	1	4/064		45 ✓	126	V.C.	L.C.A+B.
FOOD UPPER BIDGE DECK PORT LIGHTING	1	4/044	4	31 ✓	66	V.I.R.	L.C.
" " STBD "	1	4/044	4	31 ✓	108	V.I.R.	L.C.
AFT " PORT "	1	4/044	12	31 ✓	72	V.I.R.	L.C.
" " STBD "	1	4/044	12	31 ✓	108	V.I.R.	L.C.
POOP BRIDGE DECK PORT "	1	4/044	5	31 ✓	30	V.I.R.	L.C.
" " STBD "	1	4/044	5	31 ✓	30	V.I.R.	L.C.
AFT " PORT "	1	4/044	8	31 ✓	48	V.I.R.	L.C.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.							
OIL PURIFIER.	2	2	1	4/044	17.2	42	48/110	V.C.	L.C.A+B.
PRIMING PUMP	1	1.5	1	4/044	13.5	42	100	V.C.	L.C.A+B.
ENGINE ROOM VENT FANS	3	3	1	4/044	22	42	20/45/65	V.C.	L.C.A+B.
VENT FAN POOP DECK	1	4	1	4/064	32	45 ✓	330	V.C.	L.C.A+B.
WORKSHOP MOTOR.	1	5	1	4/064	42	45 ✓	142	V.C.	L.C.A+B.
CRANE MOTOR.	1	3	1	4/044	26	42	240	V.C.	L.C.A+B.
VENT FAN UPPER BIDGE DECK	1	5	1	4/064	35	46 ✓	150	V.I.R.	L.C.
" " " "	1	4	1	4/044	28	31 ✓	132	V.I.R.	L.C.
" " " "	1	1.5	1	4/036	12	24 ✓	156	V.I.R.	L.C.

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.

CAMPBELL & ISHERWOOD, LTD.  
*John Campbell*

Electrical Engineers.

Date 11<sup>th</sup> Dec 1943

COMPASSES.

Minimum distance between electric generators or motors and standard compass 32 FEET

Minimum distance between electric generators or motors and steering compass 26 FEET

The nearest cables to the compasses are as follows:—

A cable carrying .14 Ampères INSIDE foot from standard compass            feet from steering compass.

A cable carrying .14 Ampères            feet from standard compass INSIDE foot 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 NIL degrees on EVERY course in the case of the standard compass, and NIL degrees on EVERY course in the case of the steering compass.

SWAN, HUNTER, & WIGHAM RICHARDSON, LTD.

Builder's Signature.

Date 16<sup>th</sup> December 1943

*Thos. Morrison*

Is this installation a duplicate of a previous case — Director. If so, state name of vessel —

Plans. Are approved plans forwarded herewith — If not, state date of approval 23-6-43

Certificates. Are certificates of test for motors engaged on essential services and generators forwarded herewith Received 7/1/44

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

The Electrical Equipment of this vessel was installed under special Survey, in accordance with the approved plans and to the Societies Rules.

Materials used are of good quality, and the workmanship is satisfactory.

On completion, the Insulation Resistance tests, and load and governor tests on the Generators, were satisfactory.

Flight deck and armament equipment installed under the supervision of the Admiralty.

The equipment, as installed, is, in my opinion, suitable for a belassed vessel.

*Noted*  
*L.P.*  
 31/12/43.

Total Capacity of Generators 95 Kilowatts.

The amount of Fee ... £ 32.0.0. When applied for, not yet  
 £ 37: 0: 0. .....

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

*A.H. Diment*  
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute FBI 7 JAN 1944

Assigned see minute on J.E. Rpt

5m. 4.38. 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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