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# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

20 APR 1945

Date of writing Report 7th April, 1945 When handed in at Local Office 12th April, 1945 Port of Sunderland

No. in Survey held at Sunderland and Date, First Survey 3rd Jan Last Survey 6th April, 1945  
Reg. Book. Suppl. Walsand (Number of Visits 3)

89433 on the S.S. "EMPIRE MARS" Tons { Gross 8198.71  
Net 4643.71

Built at Sunderland By whom built Sir J. Langdon & Co. Ltd. Yard No. 755 When built 1945

Owners Ministry of War Transport Port belonging to Sunderland

Electrical Installation fitted by The Sunderland Engineering Co. Ltd. Contract No. 755 When fitted 1945

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 insulated Voltage of supply for Lighting 110

Heating 110 Power 110 Direct Alternating Current, Lighting Yes Power Yes 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 Yes Generators, are they compound wound Yes, are they level compounded under working conditions Yes,

if not compound wound state distance between generators Yes and from switchboard Yes 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

negative Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes 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 In mess at top of after bulkhead of

boiler room, 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 Yes and vertically Yes, 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 In mess at top of after bulkhead of

boiler room near generating sets.

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 Yes and vertically Yes, what insulation

material is used for the panels "Uony Lindings", 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 Yes 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

Knife switch and double pole fuse

and for each outgoing circuit Double pole double throw Knife switch and double

pole fuse

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

ammeters Two voltmeters Two 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 end of 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 Yes, 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 Yes 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 Yes,

state maximum fall of pressure between bus bars and any point under maximum load 46.6V, are the ends of all cables having a sectional area of 0.01

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



**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 gassing  
flaming of lighting fittings installed in suitable to protect space  
and where are the controlling switches fitted. In accommodation space above, 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. \_\_\_\_\_ 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. 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

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amphres.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN ...	2 ✓	30 ✓	110 ✓	273 ✓	685 ✓	Single cylinder steam engine		
EMERGENCY ...								
ROTARY TRANSFORMER								

DESCRIPTION.	KILOWATTS.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
		No. in Parallel For Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rate.			
MAIN GENERATORS ... ..	2 x 301	1	37/083	273	296	36/48	V.C.	L.C.
" " EQUALISER ... ..								
EMERGENCY GENERATOR ... ..								
ROTARY TRANSFORMER: MOTOR ... ..								
" " GENERATOR ... ..								

DESCRIPTION.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULA- TED 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 ...							
Mining S.B. Gangway 2nd	1	37/0.72	228	246	720	V.C.	L.C.A. 10
Mining S.B. Gangway 2nd	1	37/0.72		246	730	V.C.	L.C.A. 10
Mining S.B. (off mid. S.B.)	1	19/0.83	62	118	6	W.E.	Braded
Att. Station Board	1	19/0.64	148	135	276	V.C.	L.C.
Machine Room Station Board	1	7/2.64	64	75	180	V.C.	L.C.
Shore Connection	2	19/0.83	—	249	1216	V.C.	L.C. 10

WIRELESS (Hf. Misting S.B.)		1	7/064	34	75	100	V.C.	L.C.
NAVIGATION LIGHTS (Hf. Misting S.B.)		1	7/064	11	42	110	V.C.	L.C.
LIGHTING AND HEATING								
W.T. alt. Supply	} Hf. Misting S.B.	1	7/064	34	75	100	V.C.	L.C.
How alt. Supply + Chart Rm. S.B.		1	7/064	11	42	110	V.C.	L.C.
Offr. S.B.		1	7/064	20	42	48	V.C.	L.C.
Salon Ltg. Pst. + Lined S.B.		1	7/064	17/17	42	44/24	V.C.	L.C.
bedding Cnrg. Ltg. S.B.		1	7/064	15	42	24	V.C.	L.C.
Wash Room Batt. 4. S.B.		1	7/064	6	42	90	V.C.	L.C.
Infirmary Batt. Ch. S.B.		1	7/064	6	42	100	V.C.	L.C.
Kitchen + Syncompressor (wht.)		1	7/064	18/10	42	100/16	V.C.	L.C.
Ind. Heaters		1	7/026	14	28	330	V.C.	L.C.A. S.
Appar. S.B. Ltg. (2 S.B.)		1	7/044	7/14, 7	42	74/20, 100	V.C.	L.C.
App. S.B. Ltg. (2 S.B.)	} off app. S.B.	1	7/044	11/11	42	96, 78	V.C.	L.C.
App. Cnrg. Ltg. S.B.		1	7/064	2	42	276	V.C.	L.C.
Immunizer W.T.		1	7/064	10	42	60	V.C.	L.C.
Engine + Boiler Rm. Ltg. S.B.		1	7/064	10, 20	75	24+240	V.C.	L.C.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.							
Swimming Motor	1	8	1	19/10/64	62	135	240	V.C.	L.C.
Workshop Motor	1	3	1	7/10/64	26	75	180	V.C.	L.C.
Oil Pumping Motor (off C.B. H.B.)	2	1/2	1	7/10/64	6	42	72	V.C.	L.C.
2nd Vent. Fan	2	3	1	7/10/64	26	42	340	V.C.	L.C.
Boat Winch Motor (off Aft H.B.)	2	2	1	7/10/64	17	42	90/150	V.C.	L.C.
Vent. Fan	2	3	1	7/10/64	26	75	108/200	V.C.	L.C.
Boat Winch Motor (off Mid. H.B.)	2	2	1	7/10/64	17	42	72/112	V.C.	L.C.
Vent. Fan	1	3	1	7/10/64	26	42	48	V.C.	L.C.
Pumping Fan (off Mid. H.B.)	1	1/16	1	1/10/64	0.5	10	120	V.C.	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.

P. PRO THE SUNDERLAND FORGE & ENGINEERING CO., LTD.

Electrical Engineers.

Date 9-1-1945

#### COMPASSES.

Minimum distance between electric generators or motors and standard compass 40 feet

Minimum distance between electric generators or motors and steering compass 35 feet

The nearest cables to the compasses are as follows:—

A cable carrying 0.14 Ampères on the feet from standard compass 7 feet from steering compass.

A cable carrying 0.14 Ampères 7 feet from standard compass on the 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 7/10

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted 7/10

The maximum deviation due to electric currents was found to be Nil degrees on 4000 course in the case of the

standard compass, and Nil degrees on 4000 course in the case of the steering compass.

SIR JAMES LAING & SONS LIMITED

Builder's Signature.

Date 11.4.45

Is this installation a duplicate of a previous case 7/10 If so, state name of vessel "Empire Salisbury"

Plans. Are approved plans forwarded herewith 7/10 If not, state date of approval 16/11/43, 5/6/44

Certificates. Are certificates of test for ~~motors engaged on essential services~~ and generators forwarded herewith 7/10

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

equipment of this vessel has been installed under special survey. The materials used are of good quality and the workmanship is good. On completion the equipment was run under working conditions and found satisfactory and the insulation resistance of all circuits was measured and found good. This equipment is in my opinion suitable for a classed vessel intended to carry petroleum in bulk.

Noted

HRM

1.5.45

Total Capacity of Generators 60 Kilowatts.

The amount of Fee ...

£ 35 : 12/6 :

When applied for,

9.1.1945

(Incl. sign.)

Travelling Expenses (if any) £ :

When received.

19

S. Santison

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 4 MAY 1945

Assigned

Su F.E. uschy, apt.



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