

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

-6 FEB 1942

Received at London Office.....

Date of writing Report 22nd Jan. 42 When handed in at Local Office FEB 1942 Port of SunderlandNo. in Survey held at Sunderland and Date, First Survey 26th Nov. '41 Last Survey 29th Jan. 1942  
Reg. Book. Suppt. Walsand. (Number of Vols. 2)

36386 on the S.S. "EMPIRE AIRMAN"

Tons { Gross 9.813.  
Net 5.781.Built at Sunderland By whom built Sir J. Laing & Sons, Ltd. Yard No. 739 When built 1942Owners Ministry of War Transport Port belonging to SunderlandElectrical Installation fitted by The Sunderland Engineering Co. Ltd. Contract No. 739 When fitted 1942Is vessel fitted for carrying Petroleum in bulk Yes Is vessel equipped with D.F. Yes E.S.D. Yes Gy.C. No Sub.Sig. NoHave plans been submitted and approved Yes System of Distribution Two wire insulated Voltage of supply for Lighting 110Heating 110 Power 110 Direct or 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 atrip 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 theyarranged to run in parallel Yes, are shunt field regulators provided Yes Is the compound winding connected to the negative or positive poleNegative Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes Have certificates oftest for machines under 100 kw. been supplied Yes and the results found as per rule Yes Are the lubricating arrangements and the constructionof the generators as per rule Yes Position of Generators Engine room on raised platformaft, is the ventilation in way of generators satisfactory Yes are they clear of inflammable material Yes, if situatednear unprotected combustible material state distance from same horizontally Yes and vertically Yes, are the generators protected from mechanicalinjury and damage from water, steam and oil Yes, are the bedplates and frames earthed Yes and the prime movers and generators in metalliccontact Yes Switchboards, where are main switchboards placed Engine room port side aft neargenerating setsare they in accessible positions, free from inflammable gases and acid fumes Yes, are they protected from mechanical injury and damage from water, steamand oil Yes, if situated near unprotected combustible material state distance from same horizontally Yes and vertically Yes, what insulationmaterial is used for the panels "Epony Linsamp", if of synthetic insulating material is it an Approved Type Yes, if ofsemi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule Yes Is the frame effectually earthed YesIs the construction as per Rule Yes, including accessibility of parts Yes, absence of fuses on the back of the board Yes, individual fusesto 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 polequick break knife switch and double pole fuseand for each outgoing circuit Double pole double throw quick break knifeswitch and double pole fuseAre compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard Twoammeters Two voltmeters Two synchronising devices Two For compound machines in parallel is the ammeter connected on the pole opposite to theequaliser connection Yes Earth Testing, state means provided E lamps coupled to E through one of fusesSwitches, Circuit Breakers and Fuses, are they as per Rule Yes, are the fuses an approved type Yes, are all fuses labelled asper Rule Yes If circuit breakers are provided for the generators, at what overload current did they open when tested Yes, are the reversed currentprotection devices connected on the pole opposite to the equaliser connection Yes, have they been tested under working conditions, and at what currentdid they operate Yes Joint Boxes, Section Boards and Distribution Boards, is the construction and position as per Rule YesCables, 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 44.00, are the ends of all cables having a sectional area of 0.04square 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 Yes, 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. L.C.A.B. cables run on steel tramps along fore and aft gangway.

L.C.A.B. cables run in pipe with expansion joints on deck for emergency minis.

L.C.A.B. cables clipped to surface or to tray in machinery spaces. L.C. cables clipped to surface or to wood grinders in accommodation.

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 effectually bushed. Yes and with what material. Lead or fibre. 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. Yes, if so, how are they protected. "brign" flameproof fittings installed in entire engine space.

and where are the controlling switches fitted. In officers' accommodation, 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. \_\_\_\_\_ 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. \_\_\_\_\_ 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.

#### 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	25	110	227	685	Single cylinder steam engines		
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	2x25	1	37.088	227	296	36139	V.C.	L.C.B.
" EQUALISER								
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
" GENERATOR								

#### MAIN DISTRIBUTION CABLES.

DESCRIPTION.	No. in Parallel Per Pole.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
		Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.				
AUX. SWITCHBOARDS AND SECTION BOARDS	1							
Mid. A.B. Main feeds	1	37.072	142	246	750	V.C.	L.C.A.B.	
Do. Aux. feeds	1	37.072	142	246	820	V.C.	L.C.A.B.	
Aft. A.B. feeds	1	19.064	83	135	170	V.C.	L.C.A.B.	
Engine Room Aux. A.B.	1	7.064	49	75	60	V.C.	L.C.A.B.	

#### LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	7.064	35	75	100	V.C.	L.C.	
NAVIGATION LIGHTS	1	7.064	4	31	110	V.I.R.	L.C.	
LIGHTING AND HEATING								
Bridge A.B. Aft. A.B.	1	7.064	22	31	15	V.I.R.	L.C.	
Mid. A.B. Aft. A.B.	1	7.064	12	31	15	V.I.R.	L.C.	
Upper Prop. Aft. A.B.	1	7.064	13	31	75	V.I.R.	L.C.	
Bridge Aft. Aft. A.B.	1	7.064	13	31	110	V.I.R.	L.C.	
Lower Prop. Aft. A.B.	1	7.064	20	31	30	V.I.R.	L.C.	
Lower Prop. Aft. A.B.	1	7.064	21	31	75	V.I.R.	L.C.	
Aft. Cargo Aft. A.B.	1	7.064	2	31	30	V.I.R.	L.C.	
Upper Prop. Aft. A.B.	1	7.064	13	31	30	V.I.R.	L.C.	
Upper Prop. Aft. A.B.	1	7.064	9	31	110	V.I.R.	L.C.	
Hotplate	1	7.064	18	31	90	V.I.R.	L.C.	
Engine Room Aft. A.B.	1	7.064	29	31	30	V.I.R.	L.C.	

#### MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.						
Aft. Vent. Fan (H.F.E. A.B.)	1	43 1/4	1	7.064	43	75	230	V.C. L.C.A.B.
Fore. Vent. Fan (H.F. Mid. A.B.)	1	43 1/4	1	7.064	43	75	100	V.C. L.C.
E.S.D. Fan (H.F. E.R. Aft. A.B.)	1		1	7.064	6	31	70	V.I.R. L.C.A.B.
Workshop Motor Fan.	1		1	7.064		31	-	V.I.R. L.C.A.B.
(Motor not fitted)								



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 23-1-1942

#### COMPASSES.

Minimum distance between electric generators or motors and standard compass 290 feet

Minimum distance between electric generators or motors and steering compass 286 feet

The nearest cables to the compasses are as follows:—

A cable carrying 14 Ampères on the feet from standard compass 7 feet from steering compass.

A cable carrying 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 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.

SIR JAMES LAING & SONS LIMITED.

Builder's Signature.

Date 27.1.42

Managing Director.

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

Plans. Are approved plans forwarded herewith No If not, state date of approval 13/3/41, 18/4/41

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 has been installed under special survey in accordance with the approved plans and with the specification. The materials used are of good quality and the workmanship is good. On completion the equipment was run under working conditions with satisfactory results and the insulation resistance of all circuits was measured and found good. This equipment is in my opinion suitable for a classed vessel carrying petroleum in bulk.

Notes  
LH  
9/2/42

Total Capacity of Generators 50 Kilowatts.

The amount of Fee £ 34 : 7/6 : When applied for, 2 FEB 1942

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

B. Antinson

Surveyor to Lloyd's Register of Shipping.

FRL 20 FEB 1942

Committee's Minute

Assigned

See Old. J.E. 33310



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Foundation