

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL) 18 OCT 1945
Received at London Office.....

Date of writing Report 6th Oct 45 When handed in at Local Office..... 19... Port of Sunderland

No. in Survey held at Sunderland Date, First Survey 14th Aug Last Survey 11th Oct 1945
Reg. Book. (Number of Visits.....)

37438 on the M.V. "EMPIRE SENLAC" Tons { Gross..... Net.....

Built at Sunderland By whom built J. L. Thompson & Sons Ltd. Yard No. 642 When built 1945

Owners Ministry of War Transport Port belonging to Sunderland

Electrical Installation fitted by The Sunderland Docks & Eng. Co. Ltd. Contract No. 642 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. No Sub.Sig. No

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

Heating..... 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 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 starboard side on main

circle 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 starboard side forward

on bulkhead 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..... and vertically....., what insulation

material is used for the panels 'Ebonny Sindams', 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

quick break knife switch and double pole fuse.

and for each outgoing circuit Double pole double throw quick break 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..... synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the

equaliser connection..... Earth Testing, state means provided E lamps connected to E through series 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....., 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 Yes,

state maximum fall of pressure between bus bars and any point under maximum load < 6.6v., 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



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 Yes. Are cables in machinery spaces, galleys, laundries, etc., lead covered Yes or run in conduit Yes. State how the cables are supported and protected L.C.A.B. cables run in wood clots under fire and aft gangway and clipped to surface or tray in ventilated and engine rooms: L.C. cables clipped to surface or tray plate in engine room: L.C. surface wiring 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 effectively bushed Yes and with what material Lead or fire. 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 Wigan flameproof lighting fittings installed in ventilated forward 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 _____, 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	30	110	273	640	Single expansion 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 GENERATORS	2 x 30	1	37.083	273	296	80	V.C.	L.C.
" EQUALISER								
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
" GENERATOR								

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							
Brushing Dist. Switchboard	2	19.083	134.4	2 x 191	2 x 410	V.C.	L.C.A.B.
Aft Room S.B.	1	19.064	84.2	135	100	V.C.	L.C.
Engine Room S.B.	1	19.064	107.7	135	160	V.C.	L.C.

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	7.064	20	75	130	V.C.	L.C.
NAVIGATION LIGHTS	1	7.036	2.7	24	130	W.E.	L.C.
LIGHTING AND HEATING							
W.T. Dist. Board	1	7.064	20	75	130	V.C.	L.C.
Raw. Dist. Board	1	7.036	17.3	24	130	W.E.	L.C.
Officers' Lig. Bd.	1	7.036	14.4	24	90	W.E.	L.C.
Saloon Lig. Bd.	1	7.052	27.9	57	80	V.C.	L.C.
Brushing Comp. Bd.	1	7.036	18.8	24	80	W.E.	L.C.
Battery Ch. Bd.	1	7.036	10	24	130	W.E.	L.C.
Upper St. Port Bd.	1	7.044	7.8	31	110	W.E.	L.C.
Upper St. Star Bd.	1	7.044	7.8	31	52	W.E.	L.C.
Comp. St. Port Bd.	1	7.044	11.5	31	130	W.E.	L.C.
Comp. St. Star Bd.	1	7.044	16.8	31	64	W.E.	L.C.
Aft Comp. Bd.	1	7.036	4.3	24	64	W.E.	L.C.
Wiring. W.T.	1	7.036	10	24	112	W.E.	L.C.
Engine Room Lig. Bd.	1	7.064	18.78	75	247.60	V.C.	L.C.
Dist. Switch Board (Off. mid. dist.)	1	7.036		24	300	W.E.	L.C.A.B.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.							
Oil Separators	2	3	1	7.044	25.1	31	28.74	W.E.	L.C.
Purifying Pump	1	1/2	1	7.044	13.5	31	104	W.E.	L.C.
Crane	1	3	1	7.044	27	31	120	W.E.	L.C.
Workshop	1	2	1	7.036	17	24	24	W.E.	L.C.
Vent. Fan (Off. mid. dist.)	1	3	1	7.044	26	31	36	W.E.	L.C.
Vent. Fan (Off. aft. dist.)	1	3	1	7.052	26	57	92	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.

Sunderland Forge Coy Ltd

Electrical Engineers.

Date *8 - 10 - 1945*

A. J. Guinness

COMPASSES.

Minimum distance between electric generators or motors and standard compass *167 feet*

Minimum distance between electric generators or motors and steering compass *165 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 *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.

JOSEPH R. THOMPSON & SONS, LIMITED.
R. N. Thompson

Builder's Signature.

Date *12/10/45*

Is this installation a duplicate of a previous case *Yes* If so, state name of vessel *'Empire Arrow'*

Plans. Are approved plans forwarded herewith *No* If not, state date of approval *18/6/45 : 18/6/45*

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 inspected under special survey in accordance with the approved plans and with the Surveyor's letters. The materials used and the workmanship are good. On completion the equipment was operated under working conditions with satisfactory results and the insulation resistance of all circuits measured and found good. This equipment is in my opinion suitable for a closed vessel intended to carry petroleum in bulk.

*Noted
Rev 9.11.43*

Total Capacity of Generators *60* Kilowatts.

The amount of Fee *£ 55 : 12/6 :* (incl. *specifn.*)
Travelling Expenses (if any) £ : :
When applied for,19.....
When received,19.....

D. Harrison
Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI. 16 NOV 1945*
Assigned *See F.E. machy. rpt.*

Em. 4.38.—Transfer. (MADE AND PRINTED IN ENGLAND.)
(The Surveyors are requested not to write on or below the space for Committee's Minute.)

