

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

15 APR 1943

Date of writing Report... 13 April 43 When handed in at Local Office... 13 APR 1943 Received at London Office...

Port of Sunderland

No. in Survey held at Sunderland Date, First Survey 6th Jan Last Survey 8th April 1943
Reg. Book. Suppt. (Number of Visits... 13)

86313 on the M.V. "EMPIRE COMMERCE" Tons { Gross... 372.2 Net... 199.3

Built at Sunderland By whom built Sir J. Langtons, Ltd. Yard No. 748 When built 1943

Owners Ministry of War Transport Port belonging to Sunderland

Electrical Installation fitted by The Sunderland Eng. Co. Ltd. Contract No. 748 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. No. None Sub.Sig. None

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

Heating None Power 110 Direct or Alternating Current, Lighting Yes Power Yes If Alternating Current state periodicity None Prime Movers, None

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 None Generators, are they compound wound Yes, are they level compounded under working conditions Yes, if not compound wound state distance between generators None and from switchboard None 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 None 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 Stern quarters E.B. centre forward

quarters E.B. 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 None and vertically None, 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 centre forward

near stern 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 None and vertically None, what insulation material is used for the panels "Ebonny Linsamp" 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 None 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 None Instruments on main switchboard None

ammeters None voltmeters None synchronising devices None For compound machines in parallel is the ammeter connected on the pole opposite to the equaliser connection None Earth Testing, state means provided E lamps connected to E through one 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 None, are the reversed current protection devices connected on the pole opposite to the equaliser connection None, have they been tested under working conditions, and at what current did they operate None 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 None, state maximum fall of pressure between bus bars and any point under maximum load 4.44, 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 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 sheaths along underside of fore and aft gangway and strapped to surface or tray in machinery spaces and sunken side. L.C. cables strapped to surface in awning.

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 Yes and method of control Yes

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 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 Virgin flameproof lighting fittings installed in sunken side forward and aft and where are the controlling switches fitted On awning space above, are all fittings suitably ventilated Yes

are all fittings and accessories constructed and installed as per Rule Yes Searchlight Lamps, No. of Yes, whether fixed or portable Yes, are their fittings as per Rule Yes 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 Yes and vertically Yes 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 Yes

Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing Yes 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 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	270	685	Single expanded piston engines		
Auxiliary	1	20	110	182	750	Single expanded piston engine	Fuel Oil Above 100°F	
EMERGENCY						Single engine		
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	37/098	270	348	312.36	V.C.	L.C.A.B.
" EQUALISER								
Auxiliary Generator	20	1	37/072	182	246	280	V.C.	L.C.A.B.
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							
Machinery Rm. Gangway Rm.	1	37/072	128	246	370	V.C.	L.C.A.B.
Machinery Rm. Aft. Rm.	1	37/072	128	246	370	V.C.	L.C.A.B.
Engine Room Rm.	1	19/064	143	185	200	V.C.	L.C.A.B.
Aft Rm.	1	19/064	98	185	120	V.C.	L.C.A.B.

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	NAVIGATION LIGHTS	LIGHTING									
1	1	1	1	1	1	1	1	1	1	1	1
7/064	7/036	7/064	7/036	7/064	7/036	7/064	7/036	7/064	7/036	7/064	7/036
25	6	15x15	6	15x15	6	15x15	6	15x15	6	15x15	6
75	24	46	24	46	24	46	24	46	24	46	24
70	75	10/100	75	10/100	75	10/100	75	10/100	75	10/100	75
V.C.	W.E.	V.I.R.	W.E.	V.I.R.	W.E.	V.I.R.	W.E.	V.I.R.	W.E.	V.I.R.	W.E.
L.C.	L.C.	L.C.A.B.									

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.							
Forward Drift Pump	1	5	1	7/064	40.6	75	220	V.C.	L.C.A.B.
Oil Separator	2	3	1	7/064	25.1	31	30.60	V.I.R.	L.C.A.B.
Pumping Pump	1	1.5	1	7/036	13.5	24	40	W.E.	L.C.A.B.
San. Charge Pump	1	3	1	7/032	29.5	37	80	W.E.	L.C.A.B.
2.H. Crane	1	3	1	7/064	25	31	80	V.I.R.	L.C.A.B.
Workshop	1	3	1	7/064	25	31	100	V.I.R.	L.C.A.B.
Vent. Fan (off mid. hb.)	1	3	1	7/064	27	31	80	V.I.R.	L.C.
Vent. Fan (off aft. hb.)	1	3	1	7/052	27	37	70	W.E.	L.C.A.B.

Note. All anti-riveting wiring is done in W.E. pattern L.C. cable.

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 6. 7 - 1943

A. S. Galsworthy

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 .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 *his* degrees on *every* course in the case of the standard compass, and *his* degrees on *every* course in the case of the steering compass.

For and on behalf of

James King & Sons

Builder's Signature.

Date 22 April 1943.

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 13/1/43 & 1/2/43

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.

Noted
19/4/43

Total Capacity of Generators 80 Kilowatts.

The amount of Fee ... £ 38 : 2/6 :
(incl. specifi.)
Travelling Expenses (if any) £ : :
When applied for, 8 April 1943
When received, 19.....

Darwinson
Surveyor to Lloyd's Register of Shipping.

WED. 28 APR 1943

Committee's Minute

Assigned *See PE marks off.*

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.)