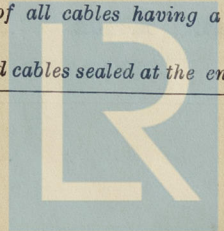


REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

6 OCT 1944

Date of writing Report 15th Sept. 1944, When handed in at Local Office 5 OCT 1944 Port of SunderlandNo. in Survey held at Sunderland Date, First Survey 17th July Last Survey 29th Sept. 1944
Reg. Book. Suppt. (Number of Visits 12)89346 on the M.V. "EMPIRE CREST" Tons {Gross 3738
Net 2002Built at Sunderland By whom built Sir J. Laing & Co., Ltd. Yard No. 760 When built 1944Owners Ministry of War Transport Port belonging to SunderlandElectrical Installation fitted by The Sunderland Dock & Eng. Co., Ltd. Contract No. 760 When fitted 1944Is 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 2 wire main and 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 starboard side forwardYes, 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 starboard sideforward of generating axisare 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 "Economy Linings", 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 poleknife switch and double pole fuseYesYesand for each outgoing circuit Double pole double throw quick break knife switchand double pole fuseAre compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard 2 wtsammeters 2 wts voltmeters 2 wts synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to theequaliser connection Yes Earth Testing, state means provided Earth lamps connected to E through ear. 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 6.6 v, are the ends of all cables having a sectional area of 0.01square inch and above provided with soldering sockets Yes Are paper insulated and varnished cambric insulated cables sealed at the ends YesLloyd's Register
Foundation

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with insulating compound 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. Are cables laid under machines or floorplates, if so, are they adequately protected. Are cables in machinery spaces, galleys, laundries, etc., lead covered or run in conduit. State how the cables are supported and protected. L.C.A.B. cables run in steel under fore and aft gangway and in pipe with expansion joints on deck for alternative supply: L.C.A.B. or L.C. surface wiring in engine room: L.C.B. surface wiring in accommodation. Are all lead sheaths, armouring and conduits effectually bonded and earthed. 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, where unarmoured cables pass through beams, etc., are the holes effectively bushed and with what material. Lead or fire. Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule. Emergency Supply, state position and method of control. Navigation Lamps, are they separately wired controlled by separate double pole switches and fuses. Are the switches and fuses in a position accessible only to the officers on watch, is an automatic indicator fitted. 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, 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. "Wagon" flameproof lighting fittings installed in accommodation spaces above, are all fittings suitably ventilated, are all fittings and accessories constructed and installed as per Rule. Searchlight Lamps, No. of, whether fixed or portable, are their fittings as per Rule. Heating and Cooking, is the general construction as per Rule. Motors, are all motors constructed and installed as per Rule and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water, steam and oil, 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. 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. Are the fittings for pump rooms, 'tween deck spaces, etc., in accordance with the special requirements for such ships. Are the cables lead covered as per Rule. Spare Gear, if the vessel is for open sea service have spares been provided as per Rule, are they suitably stored in dry situations. Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory.

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	1	30	110	273	675	Single cylinder steam engine		
	1	30	110	273	675	2nd cylinder steam engine	Fuel Oil	Above 150°F
EMERGENCY						2nd cylinder steam engine		
ROTARY TRANSFORMER						7 Ruston Proby 4 V.P.B.Z. 6hp 110 228394		

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	37/083	273	296	36/40	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							
Midship S.B. Gangway Fed	1	27/072	123	246	360	V.C.	L.C.A.B.
Midship S.B. Gangway Fed	1	27/072	123	246	360	V.C.	L.C.A.B.
Engine Room S.B.	1	19/064	126	185	180	V.C.	L.C.
Aft S.B.	1	19/064	91	135	108	V.C.	L.C.

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS (Off Midship S.B.)	1	7/026	25	46	120	W.E.	L.C.
NAVIGATION LIGHTS S.B. (Off Midship S.B.)	1	7/026	6	24	120	W.E.	L.C.
LIGHTING AND HEATING S.B. (Off Midship S.B.)	1	7/026	5+15	46	30+168	W.E.	L.C.A.B.
Bridge S.B. & Aft S.B.	1	7/026	8	24	120	W.E.	L.C.
Discharge S.B. & Aft S.B.	1	7/026	25	46	120	W.E.	L.C.
E.S.O. Battery Charging	1	7/026	5	24	168	W.E.	L.C.
Officer's S.B.	1	7/026	18	24	96	W.E.	L.C.
Cargo S.B.	1	7/026	14	24	36	W.E.	L.C.
Saloon S.B.	1	7/026	25	31	30	W.E.	L.C.
Crew Accommodation S.B.	1	7/026	5	24	168	W.E.	L.C.
Engine Room S.B.	1	7/026	5	24	126	W.E.	L.C.
Compressor S.B.	1	7/026	18	24	336	W.E.	L.C.A.B.
Prop. S.B. Sigs. Port S.B.	1	7/026	12	31	96	W.E.	L.C.
Prop. S.B. Sigs. Starboard S.B.	1	7/029	12	15	120	W.E.	L.C.
Upper S.B. Sigs. Port S.B.	1	7/044	15	31	150	W.E.	L.C.
Upper S.B. Sigs. Starboard S.B.	1	7/029	15	15	120	W.E.	L.C.
Cargo S.B.	1	7/029	2	15	120	W.E.	L.C.
Emergency S.B.	1	7/026	10	24	120	W.E.	L.C.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.						
Ground Transport Pump	1	6	1	7/026	49	46	108	W.E. L.C.
Sanitary Pump	1	9	1	19/064	75	35	144	W.E. L.C.
Trimming Pump	1	1 1/2	1	7/026	13.5	24	192	W.E. L.C.
Crew	1	3	1	7/044	25	31	120	W.E. L.C.
Workshop	1	2	1	7/026	17	24	78	W.E. L.C.
Oil Separator	2	3	1	7/044	25.1	31	108/144	W.E. L.C.
Vent. Fan (Off Midship S.B.)	1	3	1	7/044	28	31	80	W.E. L.C.
Vent. Fan (Off Aft S.B.)	1	3	1	7/026	25	46	70	W.E. 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 18-9-1944

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 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 1/2 degrees on Every course in the case of the standard compass, and 1/2 degrees on Every course in the case of the steering compass.

For and on behalf of

MR. JAMES LAING & SONS LIMITED.

Builder's Signature.

Date 20.9.44

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

Plans. Are approved plans forwarded herewith 7/10 If not, state date of approval 18/9/44

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 and the workmanship are 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 vessel intended for carrying petroleum in bulk. Note: An outbreak of fire occurred in the engine room on the 16th September affecting the oil separator motors and the wiring thereto. New separators have been fitted and new wiring thereto installed also new wiring from forced draught fan motor to its starter. New equipment tested and found satisfactory.

Total Capacity of Generators 60 Kilowatts.

The amount of Fee ... £ 35 : 12/6 : 20 Oct 1944
(Incl. Sundry)

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

S. Amison

Surveyor to Lloyd's Register of Shipping.

TUES. 17 OCT 1944

Committee's Minute

Assigned See 70 marks, rpt.