

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

MAR - 8 1938

Date of writing Report 19 When handed in at Local Office 7. 3. 1938 Port of Belfast.

No. in Survey held at Belfast Date, First Survey 25 Aug 1937 Last Survey 4/3/38 19
Reg. Book. (Number of Visits 24)

30386 on the Twin Screw Motor Vessel "Kunster" Tons { Gross 4320
Net 2220

Built at Belfast By whom built Harland & Wolff Ltd. Yard No. 996 When built 1938

Owners British & Irish Steam Packet Co. Ltd. Port belonging to Liverpool

Electric Light Installation fitted by Harland & Wolff Ltd. Contract No. 996 When fitted 1938

Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Two Wire Direct Current System ✓

Pressure of supply for Lighting 220 ✓ volts, Heating 220 ✓ volts, Power 220 ✓ volts.

Direct or Alternating Current, Lighting Direct ✓ Power Direct ✓

If alternating current system, state frequency of periods per second

Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off Yes ✓

Generators, do they comply with the requirements regarding temperature rise Yes ✓, are they compound wound Yes ✓
are they over compounded 5 per cent. Yes ✓, if not compound wound state distance between each generator

Where more than one generator is fitted are they arranged to run in parallel Yes ✓, is an adjustable regulating resistance fitted in series with each shunt field Yes ✓

Have certificates of test results for machines under 100 kw. been submitted and approved Yes ✓ Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes ✓

Have certificates for generators under 100 kw. been supplied and approved Yes ✓
Are all terminals accessible, clearly marked, and furnished with sockets Yes ✓, are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched Yes ✓

Position of Generators Main generators in Aux. Motor Room - Emerg generator on Deck, is the ventilation satisfactory ✓, are they clear of all inflammable material ✓, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the generators ✓ and ✓

are the generators protected from mechanical injury and damage from water, steam or oil Yes ✓, are their axes of rotation fore and aft Yes ✓
Earthing, are the bedplates and frames of the generating plant efficiently earthed Yes ✓, are the prime movers and their respective generators in metallic contact Yes ✓

Main Switch Boards, where placed Aux Motor Room Forward End ✓
If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard

Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes Yes ✓, are they protected from mechanical injury and damage from water, steam or oil Yes ✓, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards ✓ and ✓, are they constructed wholly of durable, non-ignitable non-absorbent materials Yes ✓, is all insulation of high dielectric strength and of permanently high insulation resistance Yes ✓

is it of an approved type Yes ✓, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework ✓, is the non-hygroscopic insulating material of an approved type ✓, and is the frame effectively earthed Yes ✓. Are the fittings as per Rule regarding: - spacing or shielding of live parts Yes ✓, accessibility of all parts Yes ✓, absence of fuses on back of board Yes ✓, temperature rise of

ammibus bars Yes ✓, individual fuses to voltmeter, pilot or earth lamp Yes ✓, are moving parts of switches alive in the "off" position No ✓, are all screws and nuts securing connections effectively locked Yes ✓, are any fuses fitted on the live side of switches No ✓

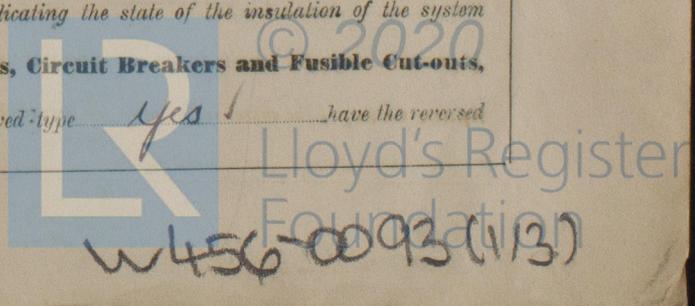
Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches D.P. O/L. Reverse current Circuit Breaker with time limit & interlocked equalizer switch for back Gen & D.P. O/L. Circuit Breaker or S.P. Switch & D.P. Led Type Fuses for Outgoing Circuits ✓

Are turbine driven generators fitted with emergency trip switch as per rule ✓ Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material Yes ✓ Instruments on main switchboard 4 ✓ ammeters 2 ✓

voltmeters 2 ✓ ~~connected to bus bars~~ for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection Yes ✓ Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system

Earth Lamps connected to Bus bars by D.P. Switch & Fuses. Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules. Yes ✓ are the fusible cutouts of an approved type Yes ✓ have the reversed

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current protection devices been tested under working conditions Yes ✓ are all fuses labelled as per rule Yes ✓

Joint Boxes, Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule Yes ✓

Cables: Single, twin, ~~concentric~~ multicore Yes ✓ are the cables insulated and protected as per Tables IV, V, X, XI, XII or XIII of the Rules Yes ✓

If the cables are insulated otherwise than as per Rule, are they of an approved type _____ **Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load 10 volts (Power) ✓ **Cable Sockets,** are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets Yes ✓

Paper Insulated and Varnished Cambric Insulated Cables, If conductors are paper or varnished cambric insulated, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound _____ or waterproof insulating tape _____

Cable Runs, are the cables fixed as far as possible in accessible positions not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical damage Yes ✓ are cables laid under machines or floorplates No ✓ if so, are they adequately protected _____

Support and Protection of Cables, state how the cables are supported and protected Hand rubber water proof type clipped to plating. In load bearing positions by clips attached to metal brackets covered with sheet metal where necessary. Except in way of bridge deck, from engine room officers access which is to be cable.

If cables are run in wood casings, are the casings and caps secured by screws Yes ✓, are the cap screws of brass Yes ✓, are the cables run in separate grooves Yes ✓. If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII Yes ✓

Refrigerated Chambers, are the cables and fittings in accordance with the special requirements _____

Joints in Cables, state if any, and how made, insulated, and protected Inspecially constructed insulated junction boxes.

Watertight Glands and Deck Tubes, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands _____

Bushes in Beams and Non-watertight Partitions, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed Yes ✓ state the material of which the bushes are made Lead. ✓

Earthing Connections, state what earthing connections are fitted and their respective sectional areas All metal portable fittings not fitted to framework of ship, are earthed with conductor equivalent to working conductor. ✓

Alternative Lighting, are the groups of lights in the propelling machinery spaces arranged as per Rule Yes ✓ **Emergency Supply,** state position and method of control of the emergency supply and how the generator is driven Emergency generator Direct coupled to Diesel Engine. In House Boat Deck ships, controlled from switchboard in same House.

Navigation Lamps, are these separately wired Yes ✓, controlled by separate switch and separate fuses Yes ✓, are the fuses double pole Yes ✓, are the switches and fuses grouped in a position accessible only to the officers on watch Yes ✓

has each navigation lamp an automatic indicator as per Rule Yes ✓. **Secondary Batteries,** are they constructed and fitted as per Rule Yes ✓ are they ventilated as per Rule Yes ✓

Fittings, are all fittings on weather decks, ~~in accessible and exposed areas~~ and wherever exposed to drip or condensed moisture, watertight Yes ✓ are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected Cast Iron Guards.

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected Guarded. Stripped fittings with screwed conduit in paint & Battery rooms ✓, how are the cables led Hard Rubber cable run in conduit.

where are the controlling switches situated Locally ✓

are all fittings suitably ventilated Yes ✓, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials Yes ✓

Heating and Cooking Appliances, are they constructed and fitted as per Rule Yes ✓, are air heaters constructed and fitted as per Rule Yes ✓

Searchlight Lamps, No. of 1 Signalling whether fixed or portable Portable ✓, are their fittings as per Rule Yes ✓

Motors, are their working parts readily accessible Yes ✓, are the coils self-contained and readily removable for replacement Yes ✓, are the brushes, brush holders, terminals and lubricating arrangements as per Rule Yes ✓, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material Yes ✓, are they protected from mechanical injury and damage from water, steam or oil Yes ✓, are their axes of rotation fore and aft Yes ✓, if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type _____, if not of this type, state distance of the combustible material horizontally or vertically above the motors _____ and _____

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing 100 B.H.P. ✓ have certificates for all motors for essential services been supplied and approved Yes ✓

Control Gear and Resistances, are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule Yes ✓

Lightning Conductors, where lightning conductors are required, are these fitted as per Rule _____

Ships carrying Oil having a Flash Point less than 150° F. Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings _____ are all fuses of the filled cartridge type _____ are they of an approved type _____

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed flameproof type approved for use in dangerous spaces _____

Spare Gear, if the vessel is for open sea service have spares been supplied as per Rule _____ are they suitably stored in dry situations _____

DESCRIPTION	NO. OF MOTORS	CONDUCTORS		COMPOSITION OF STRAND		TOTAL MAXIMUM CURRENT IN CIRCUIT	APPROXIMATE LENGTH LEAD RETURN FEET	INSULATED WITH	HOW PROTECTED	
		NO. PER POLE	TOTAL EFFECT AREA PER POLE SQ. INCH	NO.	DIA.					
ventilating fans 1/2 H.P.	2	1	0.002	3	0.029"	5	4.8	280	Rubber	Hard Rubber
do. do. 1 H.P.	1	1	0.002	3	0.029"	4	4.8	380	"	"
do. do. 1/2 H.P.	2	1	0.002	3	0.029"	2	4.8	160	"	"
entry hoist	1	1	0.002	3	0.029"	3	4.8	100	"	"
three Wash H. Pump	1	1	0.04	19	0.052"	52	64	100	"	"
oil paper fans	2	1	0.003	3	0.036"	8	12	180	"	"
sprinkler pump	1	1	0.1	19	0.083"	118	118	240	"	"
do compressor	1	1	0.003	3	0.036"	8	12	110	"	"
paste heat blower	1	1	0.0045	4	0.029"	15	18.2	120	"	"
turb oil purifiers	2	1	0.0045	4	0.029"	10	18.2	100	"	"
purified fuel oil pump	1	1	0.003	3	0.036"	6	12	30	"	"
turb oil purifiers	1	1	0.0045	4	0.029"	10	18.2	70	"	"
Wash basin & shower pump	2	1	0.002	3	0.029"	3	4.8	200	"	"
police grinder	1	1	0.002	3	0.029"	5	4.8	60	"	"
hot oil pumps	3	1	0.002	3	0.029"	2	4.8	140	"	"
auxiliary oil pump	1	1	0.003	3	0.036"	10	12	80	"	"
emergency air compressor	1	1	0.0045	4	0.029"	12	18.2	200	"	"

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHEN DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN ...	3	175	220	495	300	Diesel engine		
AUXILIARY ...								
EMERGENCY ...	1	15	220	68	1000	Diesel engine		
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR ...	2	1.5	91	0.103"	495	922 ✓	50	Rubber	Hard Rubber
EQUALISER CONNECTIONS ...	1	0.45	91	0.103"		461 ✓	25	"	"
AUXILIARY GENERATOR ...									
EMERGENCY GENERATOR ...	1	0.06	19	0.064"	68	83 ✓	50	"	"
ROTARY TRANSFORMER MOTOR ...	1	0.0145	7	0.052"	21.7	37 ✓	120	"	"
ROTARY TRANSFORMER GENERATOR ...	1	0.0145	7	0.052"	23.3	37 ✓	30	"	"
ENGINE ROOM Lighting ...	1	0.007	7	0.036"	10	24 ✓	20	"	"
BOILER ROOM Lighting ...	1	0.007	7	0.036"	20	24 ✓	200	"	"
AUXILIARY SWITCHBOARDS ...									
Emergency Switchboard	1	0.15	37	0.072"	126	152 ✓	120	"	"
No. 1. Motor Room	2	1.5	91	0.103"	855	922 ✓	100	"	"
ACCOMMODATION ...									
No. 1. A & B 1st Reference	1	0.45	91	0.103"	597	774 (1/2 HR) ✓	490	"	"
No. 1. B 2nd ad.	1	0.25	37	0.093"	200	214 ✓	200	"	"
No. 1. C 2nd Ref. (Lower)	1	0.2	37	0.083"	165	184 ✓	280	"	"
No. 1. C 2nd ad (boiling)	1	0.5	61	0.103"	330	332 ✓	280	"	"
No. 1. C & D 1st Reference	1	0.45	91	0.103"	665	774 (1/2 HR) ✓	500	"	"
WIRELESS ...	1	0.007	7	0.036"	18	24 ✓	120	P. I. R.	Lead
SEARCHLIGHT ...	1	0.002	3	0.029"	4	7.8 ✓	80	"	"
MASTHEAD LIGHT ...	1	0.002	3	0.029"	0.18	7.8 ✓	500	Rubber	Hard Rubber
SIDE LIGHTS ...	1	0.002	3	0.029"	0.18	7.8 ✓	80	P. I. R.	Lead
COMPASS LIGHTS ...	1	0.002	3	0.029"	0.09	7.8 ✓	30	"	"
STERN LIGHTS ...	1	0.002	3	0.029"	0.18	7.8 ✓	950	Rubber	Hard Rubber
PORT LIGHTS ...	1	0.007	7	0.036"	4.8	24 ✓	350	"	"
CARGO LIGHTS ...	1	0.007	7	0.036"	4.8	24 ✓	640	"	"
HEATERS ...	1	0.002	3	0.029"	4.6	7.8 ✓	80	"	"

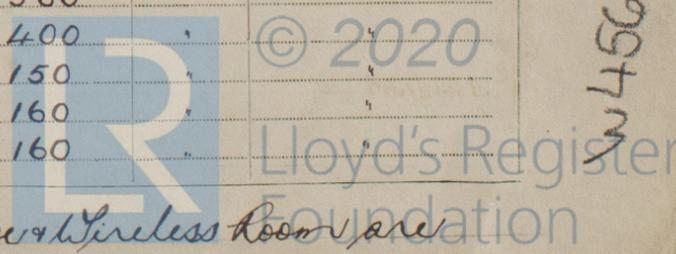
For Neon Lighting System.

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP ...	1	1	0.04"	19	0.052"	56	64 ✓	60	Rubber	Hard Rubber
MAIN BILGE LINE PUMPS ...	1	1	0.0145"	7	0.052"	32	37 ✓	60	"	"
GENERAL SERVICE PUMP ...										
EMERGENCY BILGE PUMP ...	1	1	0.03"	19	0.044"	48	53 ✓	200	"	"
SANITARY PUMP ...										
CIRC. SEA WATER PUMPS ...	2	1	0.1	19	0.083"	96	118 ✓	160	"	"
CIRC. FRESH WATER PUMPS ...	2	1	0.0225	7	0.064"	36	46 ✓	240	"	"
AIR COMPRESSOR ...	2	1	0.5	61	0.103"	392	422 (1 HR) ✓	120	"	"
FRESH WATER PUMP ...	2	1	0.0045	7	0.029"	16	18.2 ✓	180	"	"
ENGINE TURNING GEAR ...	2	1	0.0225	7	0.064"	40	46 ✓	300	"	"
ENGINE REVERSING GEAR ...										
LUBRICATING OIL PUMPS ...	2	1	0.3	37	0.103"	220	240 ✓	320	"	"
OIL FUEL TRANSFER PUMP ...	1	1	0.0045	7	0.029"	11	18.2 ✓	52	"	"
WINDLASS ...	1	1	0.5	61	0.103"	465	534 (1/2 HR) ✓	60	"	"
WINCHES, FORWARD ...	2	1	0.06	19	0.064"	87	92 (1/2 HR) ✓	200	"	"
Boat Winch	1	1	0.0225	7	0.064"	40	46 ✓	200	"	"
WINCHES, AFT ...	1	1	0.06	19	0.064"	87	92 (1/2 HR) ✓	100	"	"
Capstans, Aft	2	1	0.4	61	0.093"	380	452 (1/2 HR) ✓	160	"	"
STEERING GEAR - Bow Motor										
(a) Motor - Generator	1	1	0.0145	7	0.052"	36	37 ✓	400	"	"
(b) MAIN MOTOR ...	2	1	0.04	19	0.052"	64	64 ✓	640	"	"
WORKSHOP MOTOR ...	2	1	0.002	3	0.029"	5	7.8 ✓	60	"	"
VENTILATING FANS 9 1/2 H.P.	1	1	0.0225	7	0.064"	38	46 ✓	290	"	"
" " 7 1/2 "	2	1	0.01	7	0.044"	30	31 ✓	180	"	"
" " 6 3/4 "	1	1	0.01	7	0.044"	27	31 ✓	360	"	"
" " 5 "	2	1	0.007	7	0.036"	20	24 ✓	400	"	"
" " 4 "	2	1	0.0045	7	0.029"	16	18.2 ✓	150	"	"
" " 2 1/4 "	1	1	0.003	3	0.036"	9	12 ✓	160	"	"
" " 1 1/2 "	1	1	0.003	3	0.036"	6	12 ✓	160	"	"

Note - All cables in vicinity of Navigating Bridge & Wireless Room are P. I. R. Lead covered.

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The Electrical Equipment is installed in accordance with the approved plans.
 All Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.
 The foregoing is a correct description.



Electrical Engineers. Date 25th February 1938

COMPASSES.

Minimum distance between electric generators or motors and standard compass 60'-0" To generators; 45'-0" To Maston.
 Minimum distance between electric generators or motors and steering compass 56'-0" " " ; 41'-0" " " "

The nearest cables to the compasses are as follows:—

A cable carrying 0.09 Amperes on ~~feet from~~ standard compass ——— feet from steering compass. ✓
 A cable carrying 0.09 Amperes ——— feet from standard compass on ~~feet from~~ steering compass. ✓
 A cable carrying 31 Amperes 10 feet from standard compass 8 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 All course in the case of the standard compass, and Nil degrees on All course in the case of the steering compass.



Builder's Signature. Date 25th Feb 1938

Is this installation a duplicate of a previous case. Yes. If so, state name of vessel M.V. LEINSTER. ✓

General Remarks (State quality of workmanship, opinions as to class, &c. This installation has been fitted on board under special survey and in accordance with the approved plans and has been tested under full working conditions and found satisfactory. The materials and workmanship have been found to be good and sound. The beam lighting in the saloon has been installed in conformity with the Tentative Rules for Luminescent Discharge Tubes. ✓

Noted
 Steel
 10-3-38

Total Capacity of Generators 540 Kilowatts.

The amount of Fee	£ 58 : 10	When applied for,	7. 3. 1938
Belfast £29.5.0			
Liverpool £29.5.0			
Travelling Expenses (if any) £	:	When received,	24/3/38
			J.M.D. 25/3

R.C. Clayton, Charles Y. Hunter
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute. FRI 11 MAR 1938

Assigned See other I.B. report

The Surveyor are requested not to write on or below the space for Committee's Minute

