

27 FEB 1936

Rpt. 13.

No. 31780

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

27 FEB 1936

Date of writing Report 19 When handed in at Local Office 26 Feb 1936 Port of Sunderland.
 No. in Survey held at Sunderland. Date, First Survey 29 Jan Last Survey 17 Feb 1936
 Reg. Book. Suffix. 39869 on the M.V. Rugeley
 Built at Sunderland By whom built W. Duxford & Sons Ltd Yard No. 618 When built 1936
 Owners The Red. "R" S.S. Co Ltd Port belonging to Newcastle.
 Electric Light Installation fitted by Messrs Sunderland Forge & Eng. Co. Ltd Contract No. 618. When fitted 1936
 Is the Vessel fitted for carrying Petroleum in bulk No.

Tons { Gross 49.85
 Net 30.61

System of Distribution Double wire
 Pressure of supply for Lighting 110 ✓ volts, Heating — volts, Power 110 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 No, 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 —
 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.
 Are the lubricating arrangements of the generators as per Rule Yes.
 Position of Generators Engine room fore end stbd side, is the ventilation in way of the generators satisfactory Yes, are they clear of all inflammable material Yes, 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 Engine room fore end stbd side
 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 Yes, is the non-hygroscopic insulating material of an approved type Yes, 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 main bus 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 P. switch + 5P fuses on each dynamo. S.P.C.O.S with 5P fuses on each outgoing circuit ✓
 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 —
 Instruments on main switchboard 2 ammeters 2
 Voltmeters — synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection —
 Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system Earth lamps Coupled to earth through switches & 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

Joint Boxes, Section and Distribution Boards, is the

construction, protection, insulation, material, and position of these as per rule Yes ✓Cables: Single, twin, concentric, or multicore are the cables insulated and protected as per Tables IV, V, X or XI of the Rules. Yes.If the cables are insulated otherwise than as per Rule, are they of an approved type Yes ✓ Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load 3.5 volts ✓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 Yes or waterproof insulating tape Yes Cable Runs, are the cables fixed as far as possible in accessible positionsnot 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 in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit YesSupport and Protection of Cables, state how the cables are supported and protected In tween decks V.I. Roped & braced in heavy gauge conduit. Machinery spaces 50. Accⁿ L.C. cables clipped up.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 VIIIRefrigerated Chambers, are the cables and fittings in accordance with the special requirements YesJoints in Cables, state if any, and how made, insulated, and protected none madeWatertight Glands and Deck Tubes, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands Yes ✓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

are their connections made as per Rule YesAlternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule Yes Emergency Supply, state position and method of control of the emergency supply and how the generator is driven YesNavigation 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 Yeshas each navigation lamp an automatic indicator as per Rule Yes Secondary Batteries, are they constructed and fitted as per Rule YesFittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight Yesare any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected Yesare any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected Yeshow are the cables led Yeswhere are the controlling switches situated Yesare all fittings suitably ventilated Yes, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials YesHeating and Cooking Appliances, are they constructed and fitted as per Rule Yes, are air heaters constructed and fitted as per Rule YesSearchlight Lamps, No. of Yes, whether fixed or portable Yes, are their fittings as per Rule YesArc Lamps, other than searchlight lamps, No. of Yes, are their live parts insulated from the frame or case Yes, are their fittings as per Rule YesMotors, are their working parts readily accessible Yes, are the coils self-contained and readily removable for replacement Yesare 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 Yesare 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 Yesif not of this type, state distance of the combustible material horizontally or vertically above the motors Yes and Yeshave machines of over 100 BHP been inspected by the Surveyors during manufacture and testing Yes Control Gear and Resistances, are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule YesLightning Conductors, where lightning conductors are required, are these fitted as per Rule YesShips 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 Yesare all fuses of the filled cartridge type Yes are they of an approved type YesIf portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office YesSpare Gear, if the vessel is for open sea service have spares been supplied as per Rule 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	12.5	110	114	375	Steam engines		
AUXILIARY ...								
EMERGENCY ...								
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	No. per Pole.	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 ...	1		1009	19	.083	114	119	30	V.I. R.	L.C. + B.
EQUALISER CONNECTIONS ...										
AUXILIARY GENERATOR ...										
EMERGENCY GENERATOR ...										
ROTARY TRANSFORMER MOTOR GENERATOR ...										
ENGINE ROOM ...	1		.01046	7	.044	17.5	31	75	50	in pipe.
BOILER ROOM ...	1		.01046	7	.044	17.5	31	90	50	
AUXILIARY SWITCHBOARDS ...										
ACCOMMODATION mess hall	1		.01046	7	.044	16.0	31	90	50	50
Cargo hold	1		.01046	7	.044	12.5	31	90	50	50
WIRELESS ...	1		.01046	7	.044	12.0	31.0	175	50	50
SEARCHLIGHT ...	1		.00194	3	.029	.4	7.8	400	50	50
MASTHEAD LIGHT ...	1		.00194	3	.029	.4	7.8	60	50	L.C.
SIDE LIGHTS ...	1		.00194	3	.029	.4	7.8	20	50	50
COMPASS LIGHTS ...	1		.00194	3	.029	.4	7.8	500	50	V.I. Run pipe.
STOW LIGHTS ...	1		.00194	3	.029	.4	7.8		50	
CARGO LIGHTS ...	1		.00194	3	.029	.4	7.8		50	
ARC LAMPS ...										
HEATERS ...										

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 ...										
MAIN BILGE LINE PUMPS ...										
GENERAL SERVICE PUMP ...										
EMERGENCY BILGE PUMP ...										
SANITARY PUMP ...										
CIRC. SEA WATER PUMPS ...										
CIRC. FRESH WATER PUMPS ...										
AIR COMPRESSOR ...										
FRESH WATER PUMP ...										
ENGINE TURNING GEAR ...										
ENGINE REVERSING GEAR ...										
LUBRICATING OIL PUMPS ...										
OIL FUEL TRANSFER PUMP ...										
WINDLASS ...										
WINCHES, FORWARD ...										
WINCHES, AFT ...										
STEERING GEAR—										
(a) MOTOR GENERATOR ...										
(b) MAIN MOTOR ...										
WORKSHOP MOTOR ...	1	1	.007	7	.036	17.5	24	75	V.I. R	in heavy gauge conduit
VENTILATING FAN (Baker)	1	1	.007	7	.036	20.2	24	75	50	50
Refining motor	1	1	.0045	7	.029	13.0	18.2	70	50	50
" pump	1	1	.007	7	.036	7.5	24	70	50	50
Crane	1	1	.007	7	.036	19	24	75	50	50
Shoofles	1	1	.01	7	.044	25.5	31	100	50	50



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All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electro-technical Commission Publication No. 28).

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

James
W. Sunderland Forge & Co. L.T.D. Electrical Engineers. Date *22-2-1936*.

COMPASSES.

Distance between electric generators or motors and standard compass *70 feet.*

Distance between electric generators or motors and steering compass *64 feet.*

The nearest cables to the compasses are as follows:—

A cable carrying *4* Ampères *on the* ~~feet from~~ standard compass *6* feet from steering compass.

A cable carrying *4* Ampères *6* feet from standard compass *on the* ~~feet from~~ steering compass.

A cable carrying *4* Ampères *6* feet from standard compass *on the* ~~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.

WILLIAM DOXFORD & SONS, Limited.

James
W. Sunderland Forge & Co. L.T.D. Builder's Signature. Date *25/2/36*

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

General Remarks (State quality of workmanship, opinions as to class, &c.) *The above installation has been fitted out under special survey. The materials used & workmanship are good. The insulation resistance is good. On completion the dynamometers, main board, fuses cables & fittings were examined & tested under working conditions & found in my opinion to be satisfactory for classed vessel. The vessel is eligible in my opinion for notation.*

With notation D.F.

Noted

Y.R.

28.2.36

Total Capacity of Generators *25* Kilowatts.

The amount of Fee ... £ *20 : -* : *25 Feb 1936*

Travelling Expenses (if any) £ : : *26 Feb 1936*

W.F. Badger
Surveyor to Lloyd's Register of Shipping.

Committee's Minute *TUE. 3 MAR 1936*

Assigned *See Sld. SE. 31780*



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