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Rpt. 13.

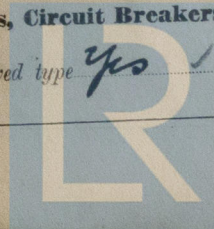
No. 3230/

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

Date of writing Report 24th Jan., 1938 When handed in at Local Office 10 FEB. 1938 Port of Sunderland
 No. in Survey held at Sunderland Date, First Survey 3rd January Last Survey 2nd February, 1938
 Reg. Book. Suppt (Number of Visits 5)
38336 on the S.S. "GEMSTONE" Tons { Gross 4986
 Net 2941
 Built at Sunderland By whom built James Caird & Co. Ltd. Yard No. 718 When built 1938
 Owners Trinity Steamship Co. Ltd. Port belonging to London
 Electric Light Installation fitted by The Sunderland Eng. & Ing. Co. Ltd. Contract No. 718 When fitted 1938
 Is the Vessel fitted for carrying Petroleum in bulk No

System of Distribution Double wirePressure of supply for Lighting 110 volts, Heating — volts, Power 110 volts.Direct or Alternating Current, Lighting Direct Power DirectIf 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 YesGenerators, 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, Cuts. HewichHave machines over 100 kw. been inspected by the Surveyors during manufacture and testing None fitted
 Have certificates for generators under 100 kw. been supplied and approved Manufacturers' Test Certs. only suppliedAre 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 YesPosition of Generators Engine room starboard side, is the ventilation in way of the generators satisfactory Yes, are they clear of all inflammable material Yes, if situated near unprotectedwoodwork 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 YesEarthing, 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 starboard side near generatorIf 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-absorbentmaterials Yes, is all insulation of high dielectric strength and of permanently high insulation resistance —, is it of an approved type —, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or othernon-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 ofomnibus 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 —Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches D.P. sw. & D.P. fuse on dynamo mains; S.P. sws. & D.P. fuses on outgoing circuitsAre 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 — ammeter — 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 E lamps coupled to E through switches & fusesSwitches, 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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W170-0066 (1/2)

current protection devices been tested under working conditions — 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, or multicore *single* *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 — *yes* **Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load *Less than 5.3 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 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 *yes* if so, are they adequately protected *yes*

Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit *yes*

Support and Protection of Cables, state how the cables are supported and protected *trains: V.I.R. in pipe; Sub-Wiring: L.C.A.B. in mach. space, L.C. elsewhere.*

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 *yes*

Joints in Cables, state if any, and how made, insulated, and protected *none made*

Watertight 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 and fibre*

Earthing Connections, state what earthing connections are fitted and their respective sectional areas — *yes* are their connections made as per Rule *yes*

Alternative 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 —

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 — are they ventilated as per Rule —

Fittings, are all fittings on weather decks, in stokeholds and engine rooms 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 —

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected —

where are the controlling switches situated —

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 — are air heaters constructed and fitted as per Rule —

Searchlight Lamps, No. of — whether fixed or portable — are their fittings as per Rule —

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 *none fitted* have certificates for all motors for essential services been supplied and approved *yes such motors fitted* **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 *yes* are they suitably stored in dry situations *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 ...	1	12.5	110	113.6	850	Single cyl. steam engine		
AUXILIARY ...	1	5.5	110	60	800	Oil engine	Oil	Over 150°F
EMERGENCY ...								
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		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	.06	19	.064	113.6	122	46	V.I.R.	L.C.A.B.
EQUALISER CONNECTIONS ...									
AUXILIARY GENERATOR ...									
EMERGENCY GENERATOR ...	1	.06	19	.064	60	83	46	V.I.R.	In galv. pipe
ROTARY TRANSFORMER MOTOR GENERATOR ...									
ENGINE ROOM ...									
BOILER ROOM ...	1	.0045	7	.029	13.6	18.2	40	V.I.R.	L.C.A.B.
AUXILIARY SWITCHBOARDS ...									
Cargo S.B. fed by: ...	1	.01	7	.044	15.9	31	64	V.I.R.	In galv. pipe
supp. 2nd. Stg. ...	1	.007	7	.036	10	24	410	V.I.R.	In galv. pipe
aft Stg. ...	1	.003	3	.036	5.9	12	190	V.I.R.	In galv. pipe
ACCOMMODATION ...									
Accom. S.B. fed by: ...	1	.01	7	.044	29.1	31	64	V.I.R.	In galv. pipe
supp. Saloon Stg. ...	1	.0045	7	.029	13.3	18.2	210	V.I.R.	In galv. pipe
Eng'rs' Stg. ...	1	.003	3	.036	8.2	12	10	V.I.R.	In galv. pipe
aft Stg. ...	1	.007	7	.036	7.6	24	320	V.I.R.	In galv. pipe
Navigation Stg. ...	1	.003	3	.036	2.5	12	220	V.I.R.	In galv. pipe
WIRELESS ...	1	.007	7	.036	10	24	210	V.I.R.	In galv. pipe
SEARCHLIGHT ...									
MASTHEAD LIGHT ...	1	.0015	1	.044	.36	6.1	250	V.I.R.	In galv. pipe
SIDE LIGHTS ...	1	.0015	1	.044	.36	6.1	60	V.I.R.	L.C.
COMPASS LIGHTS ...	1	.0015	1	.044	.14	6.1	40	V.I.R.	L.C.
STEAM PUMP LIGHTS ...	1	.0015	1	.044	.36	6.1	580	V.I.R.	In galv. pipe
CARGO LIGHTS ...									
HEATERS ...									

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		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 ...										
VENTILATING FANS ...										
Refrig. Machy. ...	1	1	.01	7	.044	24	31	280	V.I.R.	In galv. pipe

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.

New Sunderland Forge & Eng Co Ltd Electrical Engineers.
H. J. Gurney

Date *7-2-1938*

COMPASSES.

Minimum distance between electric generators or motors and standard compass *105* feet

Minimum distance between electric generators or motors and steering compass *100* feet

The nearest cables to the compasses are as follows:—

A cable carrying *14* Amperes *on the* feet from standard compass *15* feet from steering compass.

A cable carrying *14* Amperes *15* feet from standard compass *on the* feet from steering compass.

A cable carrying Amperes 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.

SIR JAMES LAURENCE & SONS, LIMITED

Alan J. Gurney

DIRECTOR

Builder's Signature.

Date *8 Feb 1938*

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 electrical equipment of this vessel has been fitted out under special survey. The materials used and the workmanship are good. On completion the installation was operated under working conditions, the governor gear of the dynamo engine tested on working loads, the main switchboard, switches, fuses, cables and fittings examined and tested and the insulation resistance of all circuits measured. The installation is in accordance with the approved plans and complies with the Rules and is eligible in my opinion for a classed vessel. A direction finding equipment and an echo sounding device are installed.*

Total Capacity of Generators *18* Kilowatts.

The amount of Fee ... £ *16 : 10* : { When applied for, 19

Travelling Expenses (if any) £ : : { When received, 3/3 1938

S. Santerson

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE 1 MAR 1938

Assigned

See Sld 96 32301