

Rpt. 13.

No. 16387

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

AUG 11 1938

Date of writing Report 4th Aug. 1938 When handed in at Local Office 10 Port of Middlesbrough
 No. in Survey held at Middlesbrough Date, First Survey 30th June, Last Survey 2nd August 1938
 Reg. Book. on the SS 'AVILA' (Number of Visits 5)

Tons { Gross 1635
 Net 782

Built at Middlesbrough By whom built Smith's Dock Co. Ltd. Yard No. 1038 When built 1938
 Owners Largo Shipping Co. Ltd. Port belonging to London
 Electric Light Installation fitted by The Sunderland Eng. & Eng. Co. Ltd. Contract No. 1038 When fitted 1938
 Is the Vessel fitted for carrying Petroleum in bulk Yes

System of Distribution Double wire ✓

Pressure of supply for Lighting 110 volts, Heating 110 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, Certs. herewith ✓ Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Have fitted ✓

Have certificates for generators under 100 kw. been supplied and approved Manufacturers' test certs. only supplied ✓

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 Engine room aft on centrelines ✓, 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 aft on centrelines ✓
 near generators ✓ 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. —

is it of an approved type —, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micaite 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 omnibus 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. sws. & D.P. fuses on general mains; D.P.C.O. sws. & D.P. fuses on 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 — Instruments on main switchboard Two ✓ ammeters Two ✓

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 & 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 ✓



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, or multicore single 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 Buns, 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 Placed on hole & below

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 yes

L.C.A.B. cables clipped to structure in engine rooms; L.C.B. basket weave armoured hole & cables run in paperwork along underside of fore and aft gangway; L.C.B. cables in accom.

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 or 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 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 yes

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected Pump room fittings mounted on pump room casings with glazed apertures how are the cables led internal to pump rooms in galvanised piping

where are the controlling switches situated on accommodation alleyways

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 one whether fixed or portable fixed 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 yes if not of this type, state distance of the combustible material horizontally or vertically above the motors yes and yes

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

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 yes

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 yes are all fuses of the filled cartridge type yes are they of an approved type yes

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 yes are they suitably stored in dry situations yes

Spare 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.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	10	110	91	350	single cylinder steam engine		
AUXILIARY								
EMERGENCY								
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.	In Circuit.	Rate.			
MAIN GENERATOR	1	.06	19	.064	91	185	44	V.C.	L.C.A.B.
SHORE CONNECTIONS	1	.06	19	.064	91	185	180	V.C.	L.C.A.B.
AUXILIARY GENERATOR									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER (MOTOR GENERATOR)									
ENGINE ROOM									
BOILER ROOM	1	.007	7	.036	15	24	80	V.I.R.	L.C.A.B.
AUXILIARY SWITCHBOARDS									
Dist. & B. feed.	1	.0225	7	.064	24.8	46	440	V.I.R.	L.C.A.B.
supply: fwd. accom.	1	.0045	7	.029	12.1	18.2	12	V.I.R.	L.C.A.B.
navigation	1	.0045	7	.029	12.7	18.2	50	V.I.R.	L.C.A.B.
ACCOMMODATION									
off accom. & B. feed.	1	.0225	7	.064	41.4	46	175	V.I.R.	L.C.A.B.
supply: fwd. O.B.	1	.007	7	.036	18.5	24	140	V.I.R.	L.C.A.B.
Port O.B.	1	.007	7	.036	22.9	24	2	V.I.R.	L.C.A.B.
WIRELESS	1	.0045	7	.029	15	18.2	490	V.I.R.	L.C.A.B.
SEARCHLIGHT	1	.0015	1	.044	4.5	6.1	36	V.I.R.	L.C.A.B.
MASTHEAD LIGHT	1	.003	1	.064	36	12.9	200	V.I.R.	L.C.A.B. & L.C.C.A.
SIDE LIGHTS	1	.0015	1	.044	36	6.1	50	V.I.R.	L.C.A.B.
COMPASS LIGHTS	1	.0015	1	.044	7.4	6.1	20	V.I.R.	L.C.A.B.
STEER LIGHTS	1	.003	1	.064	36	12.9	450	V.I.R.	L.C.A.B. & L.C.C.A.
CARGO LIGHTS									
HEATERS	1	.04	19	.052	63.6	64	180	V.C.	L.C.A.B.

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.	Rate.			
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										
Engines Room & B. feed.	1	.007	7	.036	20	24	160	V.I.R.	L.C.A.B.	
supply: Summer	1	.0045	7	.029	16	18.2	20	V.I.R.	on pipe	
mill	1	.0015	1	.044	4	6.1	30	V.I.R.	on 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.

The Sunderland Forge & Eng Co.
H. Brighton

Electrical Engineers.

Date 8. 9. 38

COMPASSES.

Minimum distance between electric generators or motors and standard compass 196 feet

Minimum distance between electric generators or motors and steering compass 190 feet

The nearest cables to the compasses are as follows:—

A cable carrying .14 Ampères on the feet from standard compass 12 feet from steering compass.

A cable carrying .14 Ampères 12 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 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.

FOR SMITH'S DOCK CO. LTD.

J. Williams

Builder's Signature.

Date 9. 8. 38

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 installed under special survey. The materials used and the workmanship are good. On completion the equipment was run under working conditions, the dynamo engine governors were operated, the main switchboard, section and distribution boards, switches, fuses, cables, motors and fittings were examined and tested, the insulation resistances of all circuits was measured and the spare gear was checked. This equipment can, in my opinion, be considered suitable for a classed vessel carrying petroleum in bulk. Winter's direction finding equipment is fitted.

Noted
J.D.D.
22/8/38

Total Capacity of Generators 20 Kilowatts.

The amount of Fee £ 17 : 10 : 10. 8. 1938

Travelling Expenses (if any) £ : : 3/10. 38

Sauterson
Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 23. AUG 1938

Assigned See F.C. Rpt.

20.12.30.—Transfer.
The Surveyors are requested not to write on or below the space for Committee's Minute

