

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 29 JUL 1936

Date of writing Report 9-7-1936 When handed in at Local Office 21-7-1936 Port of Glasgow
 No. in Survey held at Greenock Date, First Survey 12-3-36 Last Survey 6-7-1936
 Reg. Book. 70776 on the M.V. "ARINIA" (Number of Visits 7)
 Tons { Gross 8025
 Net 4777
 Built at Port Glasgow By whom built Lithgows Ltd. Yard No. 880 When built 1936.
 Owners Anglo Saxon Petroleum Co. Ltd. Port belonging to London.
 Electric Light Installation fitted by The Sunderland Engineering Co. Ltd. Contract No. 880 When fitted 1936.
 Is the Vessel fitted for carrying Petroleum in bulk Yes.

System of Distribution

Two 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 Starboard side of engine room, bottom platform. 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 In engine room, near generators on

outboard side of same. 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 micamite 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

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. switch, 2 fuses for each generator. Double pole switch & D.P. fuses for outgoing circuit change over

Are turbine driven generators fitted with emergency trip switch as per rule - Are cupboards or compartments containing switchboards composed of

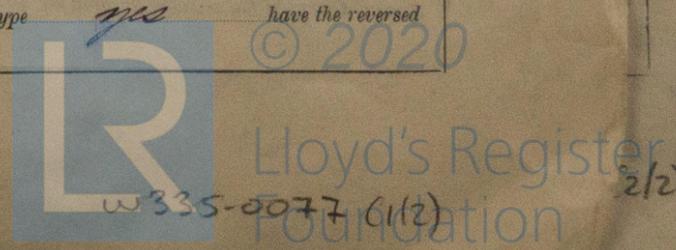
fire-resisting material or lined with approved material Yes Instruments on main switchboard 4 ammeters 2

voltmeters 2 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. 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



current protection devices been tested under working conditions 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 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 4.5 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 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 in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit L.C.A. L.C.B. L.C.C. L.C.D. L.C.E.

Support and Protection of Cables, state how the cables are supported and protected Main d.c.a. run in galvanised 1 1/2 pipe under port & aft gangway. Engine room L.C.A. clipped. Accommodation L.C. clipped.

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

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 bad

Earthing Connections, state what earthing connections are fitted and their respective sectional areas Lead covering & armoring of cables efficiently bonded & earthed by means of clips on landing glands. 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

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

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 Bulkhead on either side of Pump Room entrance. recess to suit fitting in tubery outside of Pump Room entrance.

where are the controlling switches situated Mainship house.

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, whether fixed or portable portable are their fittings as per Rule yes

Arc Lamps, other than searchlight lamps, No. of 0, are their live parts insulated from the frame or case yes 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

have 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 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 fitted 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 type approved by the Home Office 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.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	16	110	146	390	Steam & Oil Engine.	Disused above 1500° F.	
AUXILIARY								
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	0.1	19	0.003	146	172	50	Var. Cambric	L.C.A.
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER MOTOR GENERATOR									
ENGINE ROOM	1	0.04	19	0.052	36	64	210	Rubber	L.C.A.
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
SHORE CONNECTION	1	0.1	19	0.003	146	172	130	Var. Cambric	L.C.A.
MIDSHIP & FORWARD ACCOM.	1	0.06	19	0.064	30	97	530	Rubber	L.C.A.
AFT ACCOM.	1	0.0225	7	0.064	32	97	35	Rubber	L.C.A.
CARGO	1	0.06	19	0.064	24	103	520	Rubber	L.C.A.
NAVIGATION	1	0.01	7	0.044	10	131	370	Rubber	L.C.A.
ACCOMMODATION									
WIRELESS	1	0.0225	7	0.064	30	97	470	Rubber	L.C.A.
SEARCHLIGHT	1	0.06	19	0.064	60	93	335	Rubber	L.C.A.
MASTHEAD LIGHT	1	0.0015	1	0.044	0.36	6.1	410	Rubber	L.C.A.
SIDE LIGHTS	1	0.0015	1	0.044	0.36	6.1	85	Rubber	L.C.
COMPASS LIGHTS	1	0.0015	1	0.044	0.2	6.1	50	Rubber	L.C.
POOP LIGHTS									
CARGO LIGHTS									
ARC LAMPS									
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	1	1	0.0045	7	0.029	11.6	13.2	80	Rubber	L.C. Conduit.
DRILLING MACHINE	1	1	0.0045	7	0.029	12.2	13.2	110	Rubber	L.C.A.B.
GRINDING	1	1	0.0025	7	0.064	24.5	76	115	Rubber	L.C.A.B.
LATHE	1	1	0.0045	7	0.029	9.6	13.2	120	Rubber	L.C.A.B.
OIL PURIFIER	1	1	0.0045	7	0.029	16.2	13.2	50	Rubber	L.C.A.
TURNING GEAR	1	1	0.06	19	0.064	83	83	75	Rubber	L.C.A.
STAND-BY PUMP	1	1	0.0045	7	0.029	14.0	13.2	65	Rubber	L.C.A.B.

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.

P. PRO.
THE SUNDERLAND FORGE & ENGINEERING CO. LTD.

Electrical Engineers.

Date 10th July 1936

COMPASSES.

Distance between electric generators or motors and standard compass

250 feet.

Distance between electric generators or motors and steering compass

250 feet.

The nearest cables to the compasses are as follows:—

A cable carrying 1.8 Ampères 18 feet from standard compass 10 feet from steering compass.

A cable carrying 0.8 Ampères *Adante* feet from standard compass 6 feet from steering compass.

A cable carrying 0.6 Ampères 6 feet from standard compass *Adante* 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 *no* degrees on *deviation* course in the case of the standard

compass, and *no* degrees on *deviation* course in the case of the steering compass.

For LITHGOWS LIMITED *R Campbell* Builder's Signature.

Date 14th July 1936

Is this installation a duplicate of a previous case *yes* If so, state name of vessel *M.V. "MASTRA"*

General Remarks (State quality of workmanship, opinions as to class, &c. *The electrical equipment of the*

vessel has been fitted on board under special survey, tested under full working conditions and found satisfactory. The materials and workmanship were found good & sound.

J. 21/7/36

Noted

JRM

20.7.36

Total Capacity of Generators *32* Kilowatts.

The amount of Fee ... £ *23 : 0 : 0* *at 9th*

Travelling Expenses (if any) £ *9/1* *22.7.36*

L. Haffner
Surveyor to Lloyd's Register of Shipping.

Committee's Minute *GLASGOW 28 JUL 1936*

Assigned *SEE ACCOMPANYING MACHINERY REPORT.*

201534.—Transfer.
The Signatories are requested not to write on or below the space for Committee's Minute.)



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