

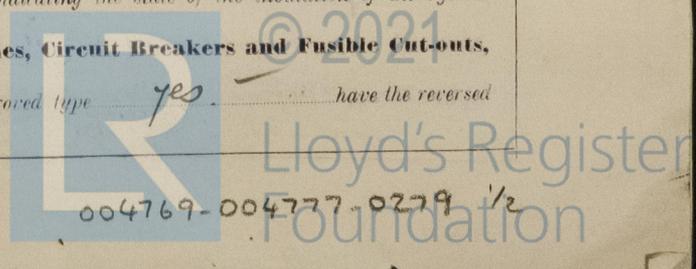
REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

Date of writing Report 13-2-39. When handed in at Local Office 20:2:39 Port of Glasgow.
 No. in Survey held at Port Glasgow. Date, First Survey 5:12:38 Last Survey 9-2-1939
 Reg. Book. 90027 on the M.V. "SAN ELISEO" (Number of Visits.....8.....)
 Tons { Gross 8042
 Net 4786
 Built at Port Glasgow. By whom built Lithgows Ltd. Yard No. 916 When built 1939
 Owners Eagle Oil & Shipping Co. Port belonging to London.
 Electric Light Installation fitted by Sunderland Forge & Eng. Co. Contract No. 916 When fitted 1939
 Is the Vessel fitted for carrying Petroleum in bulk Yes.

System of Distribution Two wire ✓
Pressure of supply for Lighting 110 ✓ volts, Heating — ✓, 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 in engine room ✓, 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 near generator. ✓
 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 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 each generator controlled by D.P. overload circuit breaker, each outgoing circuit controlled by D.P. switch and fuses.
 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. ✓ **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 **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 twin 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 **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load 4.5 Volts

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 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 yes.

Support and Protection of Cables, state how the cables are supported and protected mainly L.C.A.B. run under fore and aft gangway. machinery spaces L.C.A.B. clipped. accommodation L.C. clipped.

If cables are run in wood casings, are the casings and caps secured by screws are the cap screws of brass are the cables run in separate grooves 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 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 lead or fibre

Earthing Connections, state what earthing connections are fitted and their respective sectional areas lead and armouring efficiently earthed by means of clips or bonding glands. are their connections made as per Rule

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

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 yes special gaslight fittings at the top of the pump room. how are the cables led in gaslight tubing outside the pump room.

where are the controlling switches situated in accommodation amidships.

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

Arc Lamps, other than searchlight lamps, No. of are their live parts insulated from the frame or case 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 **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 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	Ampere	Revs. per Min.		Fuel Used	Flash Point of Fuel
MAIN	2	16	110	146	650	1 by I.E. engine 1 by steam engine	oil	above 150°F
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	Rule			
MAIN GENERATOR	1	0.75	19	0.72	146	157	66	V.C.	L.C.A.B.
SHORE CONNECTIONS	1	0.75	19	0.72	146	157	174	"	"
AUXILIARY GENERATOR									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER									
ENGINE ROOM DB. PORT	1	0.01	7	0.044	18	31	212	Rubber	"
BOILER ROOM DB. STARBOARD	1	0.01	7	0.044	18	31	168	"	"
AUXILIARY SWITCHBOARDS									
CREW AFT S.B.	1	0.75	19	0.72	84.7	157	166	V.C.	"
MIDSHIP S.B.	1	0.75	19	0.72	89.1	157	650	"	"
NAVIGATION D.B.	1	0.045	7	0.29	7.8	18.2	122	Rubber	L.C.
ACCOMMODATION									
FORECASTLE DB.	1	0.03	1	0.64	3.1	12	308	Rubber	L.C.A.B.
BRIDGE DB. PORT	1	0.045	7	0.29	13.8	18.2	76	"	L.C.
" " STARBOARD	1	0.045	7	0.29	14.2	18.2	28	"	"
POOP DB. PORT	1	0.01	7	0.044	19.7	31	146	"	"
WIRELESS	1	0.01	7	0.044	23	31	108	"	"
SEARCHLIGHT									
MASTHEAD LIGHT	1	0.03	1	0.64	36	120	540	"	"
SIDE LIGHTS	1	0.015	1	0.44	36	7.8	80	"	"
COMPASS LIGHTS	1	0.015	1	0.44	2	7.8	40	"	"
POOP LIGHTS DB. STARBOARD	1	0.01	7	0.044	17	31	72	"	"
UPPER DB. PORT	1	0.07	7	0.36	14.6	24	146	"	"
UPPER DB. STARBOARD	1	0.07	7	0.36	16.4	31	58	"	"
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	1	1	0.04	19	0.52	83	104	122	V.C.	L.C.A.B.
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 S.B.	3	1	0.225	7	0.64	60	75	212	V.C.	L.C.A.B.
VENTILATING FANS										
PURIFIER	1	1	0.01	7	0.044	18.8	31	114	Rubber	"
AIR FUEL PUMP	1	1	0.045	7	0.29	8.1	18.2	590	"	"
DRILL	1	1	0.01	7	0.044	26	31	38	"	"
GRINDER	1	1	0.045	7	0.29	17	18.2	76	"	"
LATHE	1	1	0.045	7	0.29	17	18.2	100	"	"

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 14th February 1939.

J.C. Shanks

COMPASSES.

Distance between electric generators or motors and standard compass 270 feet.

Distance between electric generators or motors and steering compass 266 feet.

The nearest cables to the compasses are as follows:—

A cable carrying 18 Ampères led into ~~feet from~~ standard compass led into ~~feet from~~ steering compass.

A cable carrying 7.8 Ampères 6 feet from standard compass 6 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 any course in the case of the standard compass, and nil degrees on any course in the case of the steering compass.

LITHGOWS LIMITED.

John McFulloch Secretary

Builder's Signature. Date 15/2/39.

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 on board under special survey, tested under full working conditions and found satisfactory. The material and workmanship are good.

Rob 20/2/39

Noted R.Y. 24/2/39

Total Capacity of Generators 32 Kilowatts.

The amount of Fee ... £ 23 : - : When applied for, 20/2/39

Travelling Expenses (if any) £ : 15/- : When received, 20/2/39

R.I. Hutchinson & Staff
Surveyors to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 21 FEB 1939

Assigned SEE ACCOMPANYING MACHINERY REPORT.



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