

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office -5 FEB '36

Date of writing Report 26th January 1936 When handed in at Local Office 4. 2. 1936 Port of Glasgow.  
 No. in Survey held at Glasgow. Date, First Survey 1st Oct 1935 Last Survey 27-1-1936  
 Reg. Book. 38108 on the S.S. "FORT AMHERST" (Number of Visits 11)  
 Tons { Gross 3489  
 Net 1946  
 Built at Glasgow. By whom built Rythymood S.B. Co. Ltd Yard No. 39 When built 1936  
 Owners Furzeo. Red Cross Line. Port belonging to London.  
 Electric Light Installation fitted by The Sunderland Forge & Engineering Co. Ltd Contract No. 39. When fitted 1936  
 Is the Vessel fitted for carrying Petroleum in bulk no.

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 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 In Engine Room near main 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 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

omnibus bars Yes ✓, individual fuses to voltmeter, pilot or earth lamp Yes ✓, are moving parts of switches alive in the "off" position no. ✓

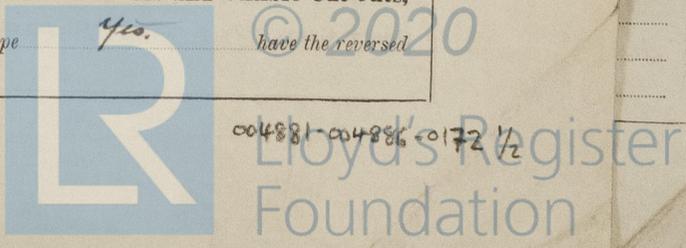
are all screws and nuts securing connections effectively locked Yes ✓ are any fuses fitted on the live side of switches no. ✓ Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches

D.P. Switch and fuses for each generator, D.P. Change-over Switch and D.P. fuses for 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 Yes ✓ 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 Castell 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 —

construction, protection, insulation, material, and position of these as per rule Yes.

**Cables:** Single, twin, ~~concentric~~ or multicore all types 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 —

any point of the installation under maximum load 5.3 Volts ✓

area of 0.04 square inch and above provided with soldering sockets Yes.

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.

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 Main cables in holds V.I.R. in conduit. Cables in accommodation V.I.R. in wood casings, tubing or lead covered as required. Machinery spaces L.C.B. or L.C.A.

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 Fibre

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas. Metallic sheathing and armouring of cables efficiently bonded and caulked by means of clips or special bonding 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 Emergency generator in special compartment together with emergency switchboard. Fully connected with main switch board through D.P. Change over switch. Generator driven by oil engine.

**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 Yes. Strong metal guards.

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

how are the cables led —

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 Yes, 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 Yes, 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 — are all fuses of the fitted 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 type approved by the Home Office —

**Spare Gear,** if the vessel is for open sea service have spares been supplied as per Rule Yes.

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	140	110	364	650	Steam Engine		
AUXILIARY ...								
EMERGENCY ...	1	20	110	182	1000	Diesel Engine	Heavy Oil above 150° F	
ROTARY TRANSFORMER								

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.	Circuit.	Rate.			
MAIN GENERATOR ...	2	28360	37	.064	364	378	50	Varn. Cambric	L.C.B.
EQUALISER CONNECTIONS ...									
AUXILIARY GENERATOR ...	1	11680	37	.064	182	189	60	"	"
EMERGENCY GENERATOR ...									
ROTARY TRANSFORMER MOTOR GENERATOR ...									
ENGINE ROOM ...	1	02214	7	.064	33.8	46	150	V.I.R.	"
BOILER ROOM ...									
AUXILIARY SWITCHBOARDS ...									
EMERGENCY SWITCHBOARD INTERCONNECTIVE PANTRY SECT. BOX.	1	11680	37	.064	182	189	220	Varn. Cambric	"
UPPER DECK AFT "	1	0600	19	.064	113	122	120	"	L.C.B.
VENT. FANS AFT "	1	03960	19	.052	56	64	80	V.I.R.	"
UPPER DECK FORWARD "	1	0600	19	.064	77	83	80	"	"
CREW CASSETTE ACCOMMODATION ...	1	0600	19	.064	41	64	80	"	"
EMERGENCY LIGHTING BRIDGE	1	01046	7	.044	25.1	31	80	"	"
NAVIGATION D.B.	1	01046	7	.044	27	31	160	"	Casing or Conduit
FORWARD CREW UPPER DECK	1	01046	7	.044	12	31	40	"	"
FORWARD " 2ND DECK	1	01046	7	.044	24.3	31	300	"	"
CAPTAIN & OFFICERS. D.B.	1	00701	7	.036	18.2	24	240	"	Casing
WIRELESS ...	1	00701	7	.036	23	24	180	"	"
EMERGENCY SMOKE ROOM D.B.	1	00701	7	.036	18.4	24	260	"	"
MASTHEAD LIGHT ...	1	00194	3	.029	36	7.8	500	"	Casing or Conduit
SIDE LIGHTS ...	1	00194	3	.029	36	7.8	80	"	"
COMPASS LIGHTS ...	1	00194	3	.029	18	7.8	30	"	"
DECK LIGHTS ...	1	00701	7	.036	20.4	24	200	"	Casing
CARGO LIGHTS " " " STRG	1	00701	7	.036	20.5	24	160	"	"
ARC LAMPS UPPER DECK AFT PART	1	01046	7	.044	28	31	200	"	"
HEATERS ... " " " STRG	1	01046	7	.044	28	31	160	"	"

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 ...	1	1	0600	19	.064	120	122	240	Varn. Cambric	L.C.B.
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	01046	7	.044	24	31	80	V.I.R.	L.C.B.
VENTILATING FANS ...										
THERMOTANK FANS (3 HP)	1	1	01046	7	.044	24	31	180	V.I.R.	CASING OR CONDUIT.
" " (1/2 HP)	2	1	00322	1	.064	12	12.9	160	"	"
SUPPLY FANS	1	1	00322	1	.064	12	12.9	40	"	"
EXHAUST FANS	3	1	00322	1	.064	4	12.9	120	"	"
GALLEY EXHAUST FAN	2	1	00322	1	.064	2	12.9	140	"	"
CALORIFIER PUMPS	2	1	00322	1	.064	2	12.9	120	"	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 30.1.36.

*J. E. Shanks*

COMPASSES.

Distance between electric generators or motors and standard compass 30 feet

Distance between electric generators or motors and steering compass 30 feet.

The nearest cables to the compasses are as follows:—

A cable carrying 36 Ampères led into feet from standard compass 6 feet from steering compass.

A cable carrying 36 Ampères 6 feet from standard compass led into feet from steering compass.

A cable carrying 27 Ampères 12 feet from standard compass 8 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.

BLYTHWOOD SHIPBUILDING CO. LTD.

*John W. Stewart*

Builder's Signature.

Date 3. 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 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 and sound

*Noted  
L.Y.  
6/2/36.*

Total Capacity of Generators 100 Kilowatts.

The amount of Fee ... ..	£ 32 : 10 : 0	When applied for,	28.1. 19 36
		When received.	31.1. 19 36
Travelling Expenses (if any) £	: 00 :		

*A. Haffes*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 4-FEB 1936

SEE ACCOMPANYING MACHINERY REPORT.

Assigned

*J.R.C.*



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2m 5.4. Transfer.  
The Signatories are requested not to write on or below the space for Committee's Minute.

*HC  
47 2-36*