

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office.....

Date of writing Report 19 When handed in at Local Office 19 Port of Barrow.

No. in Survey held at Barrow. Date, First Survey 15.4.31 Last Survey 13.12.1931.  
Reg. Book. on the Vern. Co. "Strathaird" (Number of Visits...31.....)

Built at Barrow By whom built Hickens-Armstrongs Ltd Yard No. 664 When built 1931  
Tons { Gross 22284  
Net 13435

Owners P & O Steam Navigation Co. Ltd. Port belonging to Barrow.

Electric Light Installation fitted by Hickens-Armstrongs Ltd. Contract No. 664 When fitted 1931.

System of Distribution Two wire ✓

Pressure of supply for Lighting 220 ✓ volts, Heating 220 ✓ volts, Power 220 ✓ volts.

Direct or Alternating Current, Lighting Airect ✓ Power Airect ✓

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 overload 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 Yes ✓, is an adjustable regulating resistance fitted in series with each shunt field Yes ✓

Are all terminals accessible and clearly marked Yes ✓, are they so spaced or shielded that they cannot be accidentally earthed, or short circuited Yes ✓

Position of Generators In Engine room. G. Deck Trans. 49-92 ✓, are the lubricating arrangements of the generators as per Rule Yes ✓

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 axis 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. G. Deck ✓

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, incombustible non-absorbent materials Enamelled Slate ✓, is all insulation of high dielectric strength and of permanently high insulation resistance Yes ✓

if semi-insulating material is used, are all conducting parts connected to one pole insulated from the slab with mica or micanite and the slab similarly insulated from its framework Yes ✓, and is the frame effectively earthed Yes ✓

Are the following fittings as per Rule, viz. :— spacing or shielding of live parts —, accessibility of all parts Yes ✓, absence of fuses on back of board Yes ✓, proportion of omnibus bars Yes ✓

individual fuses to voltmeter, pilot or earth lamp Yes ✓, connections of switches Yes ✓

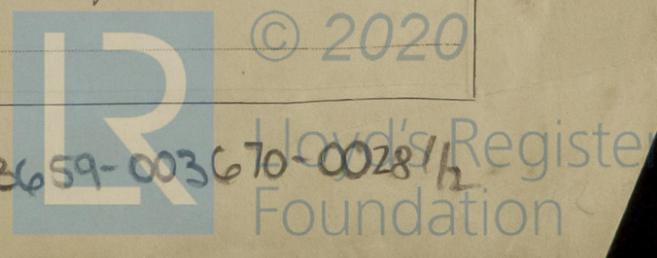
Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches: For each generator, 1 SP. Breaker with 0/2 + time lag, 1 SP breaker with equaliser mechanically connected to lag referred to + operated with 1 SP electrically operated breaker with 4/8 of (time lag) + reverse current trips. 1 on + off, push button for operating the solenoid. necessary meters etc. In each branch circuit:- circuit 300 a.c. alone provided with DP breakers having 0/2 + time lag. Current below 300 a provided with DP QB. trip switches + fuses.

Instruments on main switchboard 35 + 7 units ✓ ammeters one ✓ voltmeters one ✓ synchronising device for paralleling purposes.

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system Earth lamps with fuses + switches coupled to earth. ✓

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules Yes ✓

Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule Yes ✓



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Insulation of Cables, state type of cables, single or twin *both* are the cables insulated and protected as per Tables III or IV of the Rules *Yes*

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load *lighting 6V. Power 4V*

Cable Sockets and other connections, are the ends of all cables having a sectional area of 0.007 square inch and above provided with soldering sockets *Yes*

Paper Insulated Cables. If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *Dambic Insulated cables suitably sealed at exposed ends.*

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*

*Special heat-resisting lead covered cable is used over tops of boiler for lighting circuits etc.*

Support and Protection of Cables, state how the cables are supported and protected *supported in wood casings or by brass or galvanized iron clips. Protected by wood casing or lead sheathing or lead sheathing + galvanized steel wire armour*

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 VI *Yes*

Refrigerated Chambers, if lights are fitted, 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 Positions, 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*

Earthing Connections, state what earthing connections are fitted and their respective sectional areas

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 *Persons. Petrol. Paraffin & kerosene engine in Emergency Dynamo room on E. deck port side*

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*, are separate screens provided for the use of oil and electric side lights *Yes*, are separate oil lanterns provided for the mast head lights and side lights *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*

*Fittings in these rooms are of cast iron lamps removed when not required.*

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected *none fitted*

where are the controlling switches situated

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

Arc Lamps, other than searchlight lamps, No. of *no*, are their live parts insulated from the frame or case *Yes*, 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 axis 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 *totally enclosed*, if not of this type, state distance of the combustible material horizontally or vertically above the motors *Yes* and *Yes*

Control Gear and Resistances, are the generator field and motor speed regulators, starters and controllers constructed as per Rule *Yes*

Lightning Conductors, where lightning conductors are required, are these fitted as per Rule *Steel mesh. none required.*

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

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office

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	3	450	220	3410	640	Recond Steam Engine 6000 RPM		
AUXILIARY	1	400	220	1820	1050	" " 4500 RPM		
EMERGENCY	1	45	220	340	850	6 Cylinder Oil Engine Petrol-Paraffin		
ROTARY TRANSFORMER								

LIGHTING AND HEATING CONDUCTORS.

Ref. No.	DESCRIPTION	No. of Conductors	Effective Area of each Conductor Sq. Ins.	COMPOSITION OF STRAND		Total Maximum Current Ampères	Approximate Length (Lead and Return) Feet	Insulated with	HOW PROTECTED
				No.	Diameter.				
	MAIN GENERATOR...								
	AUXILIARY GENERATOR								
	EMERGENCY GENERATOR								
	ROTARY TRANSFORMER...								
	AUXILIARY SWITCHBOARDS								
	ENGINE ROOM								
	BOILER ROOM								
	WIRELESS								
	SEARCHLIGHT								
	MASTHEAD LIGHT...								
	SIDE LIGHTS								
	COMPASS LIGHTS								
	POOP LIGHTS								
	CARGO LIGHTS								
	ARC LAMPS								
	HEATERS								

*See Book of Diagrams*

MOTOR CONDUCTORS.

Ref. No.	DESCRIPTION	No. of Motors	Effective Area of each Conductor Sq. Ins.	COMPOSITION OF STRAND		Total Maximum Current Ampères	Approximate Length (Lead and Return) Feet	Insulated with	HOW PROTECTED
				No.	Diameter.				
	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								
	WORKSHOP MOTOR								
	VENTILATING FANS								

*See Book of Diagrams*

All Conductors are of annealed copper conforming to British Standard Specification No. 7.

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

*J. Aspinall*

Electrical Engineers.

Date 26 JUN 1936

COMPASSES.

Distance between <sup>4 1/4 HP Thermotek Fan</sup> ~~generator or motor~~ and standard compass 64 ft.

Distance between <sup>4 1/4 HP Thermotek Fan</sup> ~~generator or motor~~ and steering compass 56 ft.

The nearest cables to the compasses are as follows:—

A cable carrying 60 Ampères 12 feet from standard compass 4 feet from steering compass.

A cable carrying 16 Ampères 30 feet from standard compass 22 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 *3* degrees on *all* course in the case of the standard compass, and *3* degrees on *all* course in the case of the steering compass.

FOR WICKERS-ARMSTRONGS LIMITED

*Robert Thompson*

Builder's Signature.

Date 26 JUNE 1936

COMMERCIAL MANAGERS  
BARRROW WORKS.

Is this installation a duplicate of a previous case *Yes*. If so, state name of vessel *"Strathnaver" (Barrow Y/N° 2419)*

General Remarks (State quality of workmanship, opinions as to class, &c.) *This electric light & power installation has been apparently fitted on board, tried under working conditions & found satisfactory.*

*Notes  
None*

Total Capacity of Generators *2725* Kilowatts

The amount of Fee ... .. £	:	:	When applied for,
			19
Travelling Expenses (if any) £	:	:	When received,
			19

*W.T. Badger*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned

Im. 9. 1. 1. Transfer.  
(The Surveyors are requested not to write on or below the space for Committee's Minute.)



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