

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 27 DEC 1929

Date of writing Report 29.10.29 When handed in at Local Office 23.12.29 Port of GLASGOW.

No. in Survey held at PORT GLASGOW. Date, First Survey 16.8.29 Last Survey 6.11.29  
Reg. Book. (Number of Visits.....11.....)

40031 on the R.R.S. DISCOVERY. II  
Built at PORT GLASGOW. By whom built MESSRS FERGUSON BROS<sup>TD</sup> Yard No. 295 When built 1919.  
Tons { Gross  
Net

Owners THE GOVERNMENT OF THE FALKLAND ISLES Port belonging to LONDON.

Electric Light Installation fitted by MESSRS J. CHARTERS & CO Contract No. 295 When fitted 1929.

System of Distribution Double wire looping in system without founting.

Pressure of supply for Lighting 110 volts, Heating 110 volts, Power 110 volts.

Direct or Alternating Current, Lighting D.C. Power D.C.

If alternating current system, state frequency of periods per second of each set

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 rating 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.

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 Engine Room starting platform starboard side, 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

> 12" and > 48", 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 above Dynamos

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 > 12" and > 48"

are they constructed wholly of durable, non-ignitable non-absorbent materials Polished Marble, is all insulation of high dielectric strength and of permanently high insulation resistance mica & micaite, 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.

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, 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: ONE D.P. Change-Over Dynamo switch 2 S.P. H.O. fuses for each Dynamo! 1-D.P. switch & 2 S.P. H.O. fuses for each outgoing circuit.

Instruments on main switchboard 2 ammeters 2 voltmeters 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 One set earth lamps with switches & fuses

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

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

AP 591, AP 592 & AP 588.



Cables: Single, twin, concentric, or multicore Angle are the cables insulated and protected as per Tables IV or V of the Rules Yes

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load < 4 volts

Cable Sockets and other connections, are the ends of all cables having a sectional area of 0.04 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 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

Support and Protection of Cables, state how the cables are supported and protected Clipped fixed to steelwork & woodwork

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, 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

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

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

Guarded Fittings

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

how are the cables led Yes

where are the controlling switches situated Yes

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 ONE, 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 > 12" and > 48"

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

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office 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	ONE	28	110	254	550	2 crank Compound Steam Engine	✓	✓
AUXILIARY	ONE	10	110	91	600	1 crank Compound Steam Engine	✓	✓
EMERGENCY	✓							
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, Amperes	Approximate Length (Lead and Return), Feet	Insulated with	HOW PROTECTED
				No.	Diameter				
	MAIN GENERATOR	TWO	.0615	19	16 SWG	254	40	P.V. IR	Lead covered
	EQUALISER CONNECTIONS	✓							
	AUXILIARY GENERATOR	ONE	.0615	19	16 SWG	91	56	do	do
	EMERGENCY GENERATOR	✓							
	ROTARY TRANSFORMER	✓							
	AUXILIARY SWITCHBOARDS	✓							
	ENGINE ROOM								
	BOILER ROOM	ONE	.0125	7	18 SWG	16	60	do	do
	ACCOMMODATION FORWARD	ONE	.06	19	16 SWG	76	168	do	do
	ACCOMMODATION AFT	ONE	.019	19	20 SWG	38	66	do	do
	NAVIGATION	ONE	.00332	3	18 SWG	5	235	do	do
	W/T INSTALLATION	ONE	.0125	7	18 SWG	30	90	do	do
	REFRIGERATING	ONE	.0125	7	18 SWG	23	96	do	do
	WORKSHOP MOTOR	ONE	.0125	7	18 SWG	42	99	do	do
	SEARCHLIGHT	ONE	.0146	19	17 SWG	60	360	do	do
	ARC LAMP	ONE	.00332	3	18 SWG	15	135	do	do
	ER. JUNCTION BOX	ONE	.06	19	16 SWG	25	60	do	do
	WIRELESS	✓							
	SEARCHLIGHT	✓							
	MASTHEAD LIGHT	ONE	.00215	1	17 SWG	364	224	do	do
	SIDE LIGHTS	ONE	.00215	1	17 SWG	364	20	do	do
	COMPASS LIGHTS	ONE	.00215	1	17 SWG	137	20	do	do
	POOP LIGHTS	✓							
	CARGO LIGHTS	✓							
	ARC LAMPS	✓							
	HEATERS	✓							

MOTOR CONDUCTORS.

Ref. No.	DESCRIPTION	No. of Motors	Effective Area of each Conductor, Sq. Ins.	COMPOSITION OF STRAND		Total Maximum Current, Amperes	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						88		
	WINCHES, FORWARD								
	WINCHES, AFT								
	STEERING GEAR								
	(a) MOTOR GENERATOR								
	(b) MAIN MOTOR								
	WORKSHOP MOTOR								
	VENTILATING FANS								

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.

*W. Hatters* Electrical Engineers. Date *22 Nov 29*

**COMPASSES.**

Distance between electric generators or motors and standard compass *72 feet*  
 Distance between electric generators or motors and steering compass *68 feet*  
 The nearest cables to the compasses are as follows:—  
 A cable carrying *5* Amperes *12* feet from standard compass *4* feet from steering compass.  
 A cable carrying *60* Amperes *42* feet from standard compass *35* feet from steering compass.  
 A cable carrying *137* Amperes *in* feet from standard compass *in* 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.

FERGUSON BROTHERS (PORT-GLASGOW), LTD.  
*Robert Ferguson* DIRECTOR Builder's Signature. Date *25/12/29*

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.) *This installation has been fitted on board under special survey. Tested under full working conditions and found satisfactory. The materials and workmanship were found to be good and sound.*

*It is submitted that this vessel is eligible for THE RECORD. Elec Light.*

*(Signature)*  
 3/1/30

*A.S.*  
 24/12/29

Total Capacity of Generators *38* Kilowatts.

The amount of Fee ... £ *24.00* :  
 Travelling Expenses (if any) £ *10.6* :  
 When applied for, 19...  
 When received, **23 NOV 1929**

*J. S. Rankin*  
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 24 DEC 1929**

Assigned *Elec. Light*

Im. 238.—Transfer. (The Surveyors are requested not to write on or below the space for Committee's Minute.)