

Rpt. 13.

No. 14244

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL) 21 OCT 1930

Date of writing Report 16. 10. 1930. When handed in at Local Office 16. 10. 1930 Port of MIDDLESBROUGH.

No. in Survey held at Howerton Hall on Tees Date, First Survey 27 May Last Survey 3 August 1930

Reg. Book. 84543 on the "Sir James Clark Ross"

(Number of Visits 21)

Tons { Gross 14362. Net 8127.

Built at Howerton Hall on Tees By whom built Furness Shipbuilding Co Ltd Yard No. 158 When built 1920-8.

Owners Kvalfangeraktieselskapet Rossavik Port belonging to Sandefjord Norway

Electric Light Installation fitted by Furness Shipbuilding Co Ltd Contract No. 158 When fitted 1930

Is the Vessel fitted for carrying Petroleum in bulk Yes.

### System of Distribution

Double wire

Pressure of supply for Lighting 110 volts, Heating 110 volts, Power 220 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 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 yes, is an adjustable regulating resistance fitted in series with each shunt field

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 bottom flat forward

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 Generators in Engine Room

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, 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 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 Triple pole circuit

Breaker for each Generator, double pole switch + fuses for each outgoing circuit

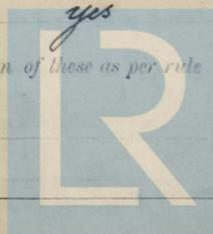
Instruments on main switchboard 8 ammeters 4 voltmeters - synchronising device for paralleling purposes.

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system

2-10 watt lamps in series + middle point earthed

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



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

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load *4.7 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

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

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

Support and Protection of Cables, state how the cables are supported and protected *Lead covered and armoured cables are supported by means of galv iron clips, lead covered cables supported by means of brass clips & screws*

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

Refrigerated Chambers, if lights are fitted, are the cables and fittings in accordance with the special requirements

Joints in Cables, state if any, and how made, insulated, and protected *Porcelain connections in W/P cases*

Watertight Glands and Deck Tubes, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands

Bushes in Beams and Non-watertight Partitions, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed  state the material of which the bushes are made *lead*

Earthing Connections, state what earthing connections are fitted and their respective sectional areas *Earthing connections are fitted with an area 50% of area of main cables*

are their connections made as per Rule

Alternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule

Emergency Supply, state position and method of control of the emergency supply and how the generator is driven

Navigation Lamps, are these separately wired , controlled by separate switch and separate fuses , are the fuses double pole

are the switches and fuses grouped in a position accessible only to the officers on watch

has each navigation lamp an automatic indicator as per Rule

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

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

*In pump rooms special gas tight fittings*, how are the cables led

*In A.C. galv iron piping*

where are the controlling switches situated *outside pump room entrances*

Searchlight Lamps, No. of *2*, whether fixed or portable *fixed*, 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 , are the coils self-contained and readily removable for replacement

are the brushes, brush holders, terminals and lubricating arrangements as per Rule , are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material

are they protected from mechanical injury and damage from water, steam or oil

are their axes of rotation fore and aft

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

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

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

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

Description	No of Motors	Conductors		Composition of Strand		Total Maximum Current Amps		Approximate Length Lead & Return feet	Insulated With	How Protected
		No per pole	Total Effective Area per pole Sq in	No	DIA	In Circuit	Rule			
DISC. BRUSHER.	1	1	.0020	3	.029	5.0	7.8	30	V.I.R	L.C.A.B.
COFFEE MILL	1	1	.0020	3	.029	1.5	7.8	80	V.I.R	L.C.A.B.
RANGE & OPEN BLOWER	1	1	.0020	3	.029	1.0	7.8	80	V.I.R	L.C.A.B.
DOUGH MIXER	1	1	.0020	3	.029	2.0	7.8	50	V.I.R	L.C.A.B.
FACTORY WORKSHOP	1	1	.0400	19	.052	55.0	84.0	300	V.C	L.C.A.B.
25" Exhaust. Fans	2	1	.0100	7	.044	20.0	31.5	100	V.C	L.C.A.B.
30" " "	2	1	.0020	3	.029	2.0	7.8	150	V.I.R	L.C.A.B.
BLOWERS for Blacksmiths Fires	2	1	.0020	3	.029	1.0	7.8	40	V.I.R	L.C.A.B.
HOT. PRESS	+	1	.0100	7	.044	20	31.5	20	V.C	L.C.A.B.
FRIGIDARE (WIRELESS)	-	1	.0100	7	.044	NOT FITTED	31.5	-	V.C	L.C.A.B.
MOTOR ALTERNATOR.	1	1	.0145	7	.052	30.0	87.0	1100	V.I.R	L.C.A.B.
POTATO SCRAPER	1	1	.0020	3	.029	1.5	7.8	30	V.I.R	L.C.A.B.
AFT ACCOM A Box	-	1	.0100	7	.044	12.3	26.0	200	V.I.R	L.C.A.B.
" B "	-	1	.0100	7	.044	18.7	26.0	200	"	"
" C "	-	1	.0225	7	.064	24.5	38.5	200	"	"
" D "	-	1	.0225	7	.064	17.0	38.5	200	"	"
FWD ACCOM T Box	-	1	.0100	7	.044	17.4	26.0	100	"	"
" F "	-	1	.0100	7	.044	10.0	26.0	100	"	"
" E "	-	1	.0100	7	.044	11.0	26.0	100	"	"
" G "	-	1	.0100	7	.044	11.1	26.0	100	"	"
" H "	-	1	.0100	7	.044	14.8	26.0	100	"	"
Enginc. Rm P	-	1	.0100	7	.044	20.0	26.0	200	"	"
" R "	-	1	.0100	7	.044	26.0	26.0	200	"	"
" S "	-	1	.0100	7	.044	19.4	26.0	200	"	"
Factory M	-	1	.0100	7	.044	22.9	26.0	100	"	"
" N "	-	1	.0100	7	.044	15.4	26.0	100	"	"
" K "	-	1	.0100	7	.044	20.7	26.0	100	"	"
" L "	-	1	.0100	7	.044	16.0	26.0	100	"	"
Nav. J	-	1	.0100	7	.044	5.0	26.0	180	"	"
Floodlights	-	1	.0045	7	.029	9.0	17.5	220	"	"
Floodlight.	-	1	.0045	7	.029	9.0	17.5	220	"	"

According to Hamburg Report 21313 dated 10 34 there are 5000 horse power driven dynamos on board 2 of which (38KW each) driven by Malmstedt engines were fitted in 10 34  
 1 3 cyl. Allen added 9.46

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	100	220	455	400	Diesel Engine	Diesel Oil	above 150° F.
AUXILIARY ...	1 (Centre)	25	220	44	500	oil eng Kw not stated		
EMERGENCY ...	1	32	220	44	500	Steam Engine		
Motor Generators	2	25	110/220	227	1000			
ROTARY TRANSFORMER	2					Malmstedt engine 38KW each.		

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 Effective Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATOR ...	1	5000	61	.103	Total 426	60	V.C	L.C.A+B.	
EQUALISER CONNECTIONS ...	-	2000	37	.083	Load 266	60	"	"	
MAIN AUXILIARY GENERATOR ...	1	5000	61	.103	486	60	"	"	
EMERGENCY GENERATOR ...	1	1000	19	.083	531.0 172	50	"	"	
EQUALISER CONNECTION ...	-	1000	19	.083	172	50	"	"	
ROTARY TRANSFORMER MOTOR GENERATOR ...	1	1000	19	.083	190 input 172	50	"	"	
TRANSFORMER	1	2500	37	.083	350 output 266	70	"	"	
ENGINE ROOM ...									
BOILER ROOM ...									
AUXILIARY SWITCHBOARDS ...									
Sherry Gyro.	1	0100	7	.044	20.0 / 31.5	100	V.C	L.C.A+B.	
ACCOMODATION ...									
SEARCHLIGHT ...									
MASTHEAD LIGHT ...									
SIDE LIGHTS ...									
COMPASS LIGHTS ...									
POOP LIGHTS ...									
CARGO LIGHTS ...									
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 Effective Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP ...	1	1	.0225	7	.064	30.0 / 68.0	140	V.C	L.C.A+B.	
MAIN BILGE LINE PUMPS ...										
GENERAL SERVICE PUMP ...										
EMERGENCY BILGE PUMP ...										
SANITARY PUMP v. Bilge ...	1	1	.0225	7	.064	25.0 / 68.0	120	V.C.	L.C.A+B.	
CIRC. SEA WATER PUMPS ...										
CIRC. FRESH WATER PUMPS ...										
AIR COMPRESSOR ...										
FRESH WATER PUMP ...										
ENGINE TURNING GEAR ...	2	1	.0100	7	.044	15.0 / 31.5	400	V.C	L.C.A+B.	
ENGINE REVERSING GEAR ...										
LUBRICATING OIL PUMPS } ...	2	1	.1500	37	.072	120.0 / 222	300	V.C	L.C.A+B.	
COOLING WATER PUMP ...	1	1	.0100	7	.044	12.0 / 31.5	100	V.C	L.C.A+B.	
OIL FUEL TRANSFER PUMP ...										
WINDLASS ...										
WINCHES, FORWARD ...										
Hot Water Pumps	2	1	.0040	7	.029	12.0 / 17.5	60	V.I.R	L.C.A+B.	
WINCHES, AFT ...										
STEERING GEAR—										
(a) MOTOR GENERATOR ...										
(b) MAIN MOTOR ...	1	1	.0600	19	.064	120.0 / 122	500	V.C	L.C.A+B.	
WORKSHOP MOTOR ...	1	1	.0100	7	.044	15.0 / 31.5	220	V.C	L.C.A+B.	
VENTILATING FANS See Separate Sheet										
Cold Water Pumps	2	1	.0040	7	.029	12.0 / 17.5	80	V.I.R.	L.C.A+B.	
Distillers	2	1	.0040	7	.029	12.0 / 17.5	80	V.I.R	L.C.A+B.	
Centrifuges	3	1	.0040	7	.029	12.0 / 17.5	80	V.I.R	L.C.A+B.	
Refrig. Compressor	1	1	.0400	19	.052	40.0 / 84.0	60	V.C.	L.C.A+B.	
Refrig. Water pumps	2	1	.0030	3	.036	5.0 / 12.0	60	V.I.R	L.C.A+B.	
Factory Separators	7	1	.0040	7	.029	10.0 / 17.5	40	V.I.R	L.C.A+B.	

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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.

*P. J. Power*

Electrical Engineer.

Date *4th Oct 1930*

FURNESS SHIPBUILDING Co. LIMITED

COMPASSES.

Distance between electric generators or motors and standard compass ..... *610'*

Distance between electric generators or motors and steering compass ..... *600'*

The nearest cables to the compasses are as follows:—

A cable carrying *1* Ampères *4* feet from standard compass ..... *4* feet from steering compass.

A cable carrying *-* Ampères *-* feet from standard compass ..... *-* 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 *all* courses in the case of the standard compass, and *nil* degrees on *all* courses in the case of the steering compass.

FURNESS SHIPBUILDING Co. LTD

*J. M. Lovering*  
DIRECTOR

Builder's Signature.

Date *4th Oct 1930*

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 materials and workmanship are good.*

*This electric installation has been fitted in accordance with the Rules and approved Plan under special survey and has been tested under working conditions with satisfactory results. In our opinion it is suitable for a vessel classed with this Society.*

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

*(Signature)*  
*14/11/30*

Total Capacity of Generators *232* Kilowatts.

The amount of Fee ... £ *37-6-0*

Travelling Expenses (if any) £ :

*7/8*  
*30/8*

When applied for, *5-8-1930*

When received, *3-9-1930*

*(Signature)*

*P. J. Man G*

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned

*Elec Lt*



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Im. 11. 20. — Transfer. (The Surveyors are requested not to write on or below the space for Committee's Minute.)