

Rpt. 13.

No. 2178

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

28A. 7K 1926

Received at London Office.....

Date of writing Report 15<sup>th</sup> April 1926. When handed in at Local Office

19 Port of Barrow-in-Furness.

No. in Survey held at Barrow.

Date, First Survey 26<sup>th</sup> June/25 Last Survey 21 December 1925

Reg. Book.

(Number of Visits.....)

on the Tug screw steamer "Otranto"

Tons { Gross 20000  
Net 12031

Built at Barrow.

By whom built

Bickers Ltd

Yard No. 619

When built 1925-12

Owners Orient Steam Navigation Co. Ltd

Port belonging to

Barrow

Electric Light Installation fitted by

Bickers Ltd

Contract No. 619

When fitted 1925

## System of Distribution

Two Wire System ✓

Pressure of supply for Lighting

220 ✓

volts, Heating

220 ✓

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 overload

Yes ✓

, are they compound wound

Yes ✓

are they over compounded 5 per cent.

No

, 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

Are the lubricating arrangements of the generators as per Rule

Yes

## Position of Generators

In Dynamo room situated on "G" Deck forward of Engine room Hatchway.

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 Dynamo room.

3 Sections Port Starboard and Centre.

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

Framelled 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

Yes

, accessibility of all parts

Yes

, absence of fuses on back of board

Yes

, proportion of omnibus

bars

, individual fuses to voltmeter, pilot or earth lamp

, connections of switches

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches

To each Generator: Triple

Pole circuit breaker with DP of 2 DP Release. (1 pole Electrically operated) Equaliser switch has no automatic features. Branch

Circuits to Auxiliary switchboards. DP tandem circuit breakers with time lag and of releases. To Motors etc. Single Pole knife switch

4 DP fuses.

Instruments on main switchboard

Three

ammeters

Six

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 220 volt lamp with fuse and switch between each pole and 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 *Yes* 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 6 volts. Power 8 volts*

**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 *no paper insulated cables.*

**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 boilers 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 galvanised iron clips. Protected by wood casing or lead sheathing or lead sheathing and galvanised 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 *no joints*

**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 *Fibre*

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

*Two conductor insulated system*

, 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 *Allen Semi-diesel 2 Cylinder engine in Emergency Dynamo room. A deck. with a distribution switchboard for Emergency Circuit and a main Emergency change over switch.*

**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*,

*lighting fittings in these rooms are of Cast Iron. Lamps are 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*

, how are the cables led

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 *none*, 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 axis of rotation fore and aft *no*,

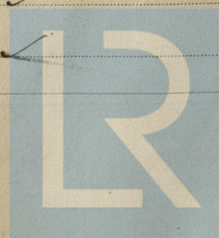
if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type *totally enclosed*, if not of this type, state distance of the combustible material horizontally or vertically above the motors *18" Horizontal* and *✓*

**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 *none required (Steel masts)*

**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 *✓*



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## 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	400 each.	220.	1818.	500.	Leard Steam Turbine		
AUXILIARY ...								
EMERGENCY ...	1	36.	220.	163	325.	Semi-diesel Engine	Crude Oil	Above 150°F.
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 GENERATORS <sup>2 Poles</sup>	5	1.125	Blue Boro	4 1/2" x 1/4"	909 each.		Porcelain Insulators	Heat Iron
	AUXILIARY GENERATOR								
	EMERGENCY GENERATOR	1 Pole	.2	3Y	.083	164	30	L. I. R.	Braided & Armoured.
	ROTARY TRANSFORMER								
	ENGINE ROOM #1								
	AUXILIARY SWITCHBOARDS	2 Poles	.3	3Y	.103	350	56	L. I. R.	Lead Covered.
	ENGINE ROOM #2		.3	3Y	.103	420	46	"	"
	ENGINE ROOM #3		.25	3Y	.093	340	284	"	"
"A"	Auxiliary Switch Board		.3	3Y	.103	590	500 (Std.)	"	Braided & Armoured.
"B"	" " " Port		.3	3Y	.103	310	336	"	" "
"B"	" " " Std		.3	3Y	.103	310	416	"	" "
"C"	" " " Port		.3	3Y	.103	350	152	"	" "
"C"	" " " Std		.3	3Y	.103	350	272	"	" "
"D"	" " " "		.25	3Y	.093	590	324 (Std)	"	" "
"X1"	Van Switchboard		.2	3Y	.083	270	184	"	" "
"X2"	" " " "		.2	3Y	.083	270	144	"	" "
"G"	Galley Switchboard	1 Pole	.4	61	.073	435	120 (Std)	"	" "
"R"	Refrigerating Switchboard	2 Poles	.6	91	.073	940	200 (Std)	"	" "
"E"	Emergency Switchboard	1 " "	.25	3Y	.093	163	400 (Std)	"	" "
	WIRELESS	1 Pole	.07	Y	.052	Y	528	"	Lead Covered.
	SEARCHLIGHT	1 " "	.06	19	.064	60	352	"	Hemp Braided
	MASTHEAD LIGHT	1 " "	.009	3	.024	45	450	"	Hemp Braided Conduit
	SIDE LIGHTS	1 Pole	.072	3	.039	45	132	"	Lead Covered.
	COMPASS LIGHTS	1 " "	.072	3	.039	15	20	"	" "
	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.				
	Aux Air Ballast Pump	1	.06	19	.064	60	120	L. I. R.	Lead Covered.
	MAIN BILGE LINE PUMPS	2	.03	19	.044	41	90	L. I. R.	Lead Covered.
	Forward Lubrication PUMPS	2	.2	3Y	.083	132	120	"	" "
	EMERGENCY BILGE PUMP	1	.15	37	.072	88	840	"	Armoured & Braided
	SANITARY PUMPS	2	.15	3Y	.072	138	120	"	Lead Covered.
	CIRC. SEA WATER PUMPS	1	.045	19	.072	84	90	"	Lead Covered.
	Galley Water Pumps	1	.04	19	.052	48	120	"	" "
	AIR COMPRESSOR	2	.15	3Y	.072	132	90	"	Lead Covered.
	Hotwell Pumps	2	.045	19	.072	84	150	"	" "
	ENGINE TURNING GEAR	2	.075	19	.072	96	150	"	" "
	Boiler Room Fan	6	.045	19	.072	89	120	"	Armoured & Braided
	ENGINE REVERSING GEAR	4	.045	Y	.052	20	300	"	Lead Covered.
	LUBRICATING OIL PUMPS	2	.03	19	.044	32	300	"	Armoured & Braided
	OIL FUEL TRANSFER PUMPS	2	.3	3Y	.103	400	360	"	" & Conduits
	WINDLASS	6	.045	19	.072	84	180	"	Lead Covered.
	WINCHES, FORWARD	10	.1	19	.083	100	180	"	Cotton Braided Conduits
	WINCHES, AFT	2	.3	3Y	.103	200	540	"	Armoured & Braided
	STEERING GEAR	5	.045	Y	.052	20	60	"	Lead Covered.
	WORKSHOP MOTOR	2	.04	19	.052	48	150	"	Cotton Braided
	VENTILATING FANS (Refug.)	6	.04	19	.052	50	120	"	Lead Covered.
	Boat Hoists	1	.07	Y	.044	24	120	"	" "
	Capstans (Aft)	2	.4	61	.073	240	330	"	" "
	Passenger Lift	1	.004	Y	.036	16	60	"	" "
	Stores	2	.03	19	.044	32	180	"	Cotton Braided
	Refrigerating Machinery	3	.6	91	.073	368	210	"	Lead Covered.
	Brine Pumps	4	.0225	Y	.064	32	120	"	" "
	Water Circulating Pumps	2	.0225	Y	.064	32	120	"	" "
	Bilge Pump (Ref Room)	1	.045	Y	.039	8	60	"	" "
	Van for Refrigerating Room	1	.045	Y	.039	6	210	"	" "



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.

For VICKERS LIMITED.

*J. S. L. Smith* Electrical Engineer.

Date 22nd April, 1926.

#### COMPASSES.

*6 H.P. Boat Hoist*  
Distance between ~~electric generators or motors~~ and standard compass 50 ft.

*6 H.P. Boat Hoist*  
Distance between ~~electric generators or motors~~ and steering compass 46 ft.

The nearest cables to the compasses are as follows:—

A cable carrying 6 Ampères 13 feet from standard compass 10 feet from steering compass.

A cable carrying 24 Ampères 25 feet from standard compass 20 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* course in the case of the standard compass, and *nil* degrees on *all* course in the case of the steering compass.

For VICKERS LIMITED.

*S. W. J. Smith*

DIRECTOR.

Builder's Signature.

Date 22/4/26.

Is this installation a duplicate of a previous case *Yes* If so, state name of vessel *V.L.S. "Orania"*

General Remarks (State quality of workmanship, opinions as to class, &c.)

*This Electric light and Power installation has been efficiently fitted on board and proved satisfactory under working conditions. In my opinion the vessel is eligible to have the notation of Electric light made in the Register Book.*

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

*C. W. J. Smith*  
29/4/26

Total Capacity of Generators Kilowatts

The amount of Fee ... £ 62 : 8

When applied for,  
Dec 13 1925.  
When received,  
Jan 14 1926.

Travelling Expenses (if any) £ :

*W. C. Cowie*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned

1m. 9.24.—Transfer.  
(The Surveyors are requested not to write on or below the space for Committee's Minute.)



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Description	No. of Motors	Effective Area of each Conductor sq. inches	Composition of Strands		Total maximum Current Amperes.	Approx. length lead stretch Feet.	Insulated with	How Protected
			No.	Diameter				
Printing Machine	1	.003	3	.036	4	120	4. I. R.	Cotton Braided
Hydro Extractor	2	.003	3	.036	8	120	"	Lead Covered
Washer	1	.0045	4	.029	12	180	"	" "
Dry Room Lumber Fan	1	.003	3	.036	8	90	"	" "
Bilge Pump (Steering Compst)	1	.003	3	.036	3	180	"	" "
Callender	1	.003	3	.036	8	180	"	" "
Cuff & Collar Machine	1	.003	3	.036	8	180	"	" "
Boat Winches	2	.003	19	.044	30	90	"	" "
Engineers Hoist	1	.004	4	.036	12	120	"	" "
Supply Pump	1	.003	3	.036	2	90	"	" "
Oil Separator	1	.003	3	.036	6	120	"	" "
Drain Tank Pump	1	.0045	4	.029	3	180	"	" "
Eng. Room Fans	2	.06	19	.064	54	300	"	" "
Galley Blowers	2	.0045	4	.029	9	150	"	" "
Dishwashers	2	.0045	4	.029	8	150	"	" "
Ice Cream Mgrs.	1	.004	4	.036	12	180	"	" "
Milk Emulsifier	1	.003	3	.036	4	180	"	" "
Potato Peeler	1	.002	3	.029	2	120	"	" "
Dough Mixer	1	.004	4	.036	16	60	"	" "
Mincing Machine	1	.0045	4	.029	8	150	"	" "
Whisking Machine	1	.002	3	.029	4	90	"	" "
Roll Chaffer	1	.003	3	.036	6	90	"	" "
Burnisher	1	.003	3	.036	2	180	"	" "
Radiator Fan	1	.004	4	.036	16	18	"	" "
Vent. Fans	22	.003	3	.036	1	180	"	Cotton Braided
" "	15	.003	3	.036	2	150	"	" "
" "	4	.003	3	.036	3	180	"	" "
" "	3	.0045	4	.029	5	150	"	" "
" "	1	.003	3	.036	6	30	"	Lead Covered
" "	1	.0045	4	.029	4	60	"	" "
" "	21	.004	4	.036	8	150	"	Cotton Braided
" "	1	.004	4	.036	10	42	"	" "
" "	18	.01	4	.044	14	150	"	" "
" "	3	.01	4	.044	18	150	"	Lead Covered
" "	4	.01	4	.044	22	90	"	" "
Hot Water Boilers	4	.014	4	.036	16	120 Each	"	" "
Radiators	144	.003	3	.036	2, 34 & 150	60, 60 & 120	"	Cotton Braided
Roasting Ovens	2	.03	19	.044	15 Kw.	60	"	Lead Covered
Grill	2	.0225	4	.064	11 Kw.	60	"	" "
Bakers Oven	2	.06	19	.064	16 Kw.	240	"	" "
Yeast	1	.06	19	.064	11 Kw.	180	"	" "
Electric Irons	10	.002	3	.029	2, 1.75 & 1	60 Each	"	" "
Hot Plates	10	.003	3	.036	9	180	"	Cotton Braided

Heater  
Conductors