

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 11 NOV 1924

Date of writing Report 5<sup>th</sup> Nov. 1924 When handed in at Local Office 19 Port of Barrow-in-Furness

No. in Survey held at Barrow Date, First Survey 16<sup>th</sup> June Last Survey 6<sup>th</sup> Oct 1924  
Reg. Book. (Number of Visits 13)

79141 on the Twin screw steamer "Orama" Tons { Gross 19444  
Net 11942

Built at Barrow By whom builtickers h<sup>d</sup>. Yard No. 598 When built 1924

Owners Crescent Steam Navigation Co<sup>h</sup>d. Port belonging to Barrow.

Electric Light Installation fitted byickers h<sup>d</sup> Contract No. 598 When fitted 1924

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

Position of Generators Dynamo room on "C" Deck Frames 85 to 92 1/2

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 (port, starboard and ✓)

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 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 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 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:—

Triple pole circuit breaker with DP 7. & R/C release (1 pole electrically operated) Equalizer switch has no automatic features: Branch Circuits:— 40 Ampere Switchboards DP tandem Circuit Breaker with time lag 7. releases. 40 Motors etc:— Single pole knife switch with 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



**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 6.6 volts. Power 8.3 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 *None*

**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 cables over tops of boilers for lighting circuits etc.*

**Support and Protection of Cables**, state how the cables are supported and protected *Wood casings, lead sheathing or lead sheathing & armor.*

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 armored 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*

**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 *No conductor, insulated system*

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 *Allen Come Diesel 2 Cylinder Engine in Emergency Dynamometer on 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 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*

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 *None*, 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 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" horizontally 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 *Not 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 *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.	Amperes.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	3	400	220	181.8	500	Grand Steam Turbine		
AUXILIARY	✓	✓	✓	✓	✓			
EMERGENCY	1	36	200	163	325	2 Cylinder 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	5	1.125	Bushes	4 1/8 x 1/4	9.07	34 each	Enamel Insulation	Sheet Metal
	AUXILIARY GENERATOR	2 Pa. Pole	✓	✓	✓	✓	✓	✓	✓
	EMERGENCY GENERATOR	1 Pa. Pole	0.2	34	0.83	164	30	V.I.R.	Braided & Armoured
	ROTARY TRANSFORMER								
	AUXILIARY SWITCHBOARDS	Detailed below							
	ENGINE ROOM								
"EJ2"	BOILER ROOM	1 Pa. Pole	0.6	19	0.64	60	830	V.I.R.	Lead Covered
"A"	Auxiliary Switchboard	2 Pa. Pole	0.3	34	1.03	590	300 Pnt. 400 S.H.H.	V.I.R.	Braided & Armoured
"B"	"	"	0.3	34	1.03	620	234 Pnt. 416 S.H.H.	V.I.R.	"
"C"	"	"	0.3	34	1.03	400	182 Pnt. 272 S.H.H.	V.I.R.	"
"D"	"	"	0.25	34	0.93	590	224 Pnt. 424 S.H.H.	V.I.R.	"
"E"	Emergency Switchboard	1 Pa. Pole	0.25	34	0.93	164	292 Main 492 Emergency	V.I.R.	"
"F1"	Van Yuss Boards	2 Pa. Pole	0.2	34	0.83	240	184	V.I.R.	"
"F2"	"	"	0.2	34	0.83	240	144	V.I.R.	"
"G"	Galley Switchboard	"	0.4	61	0.93	435	120	V.I.R.	"
"E1"	Engine Room Van Yuss Board	"	0.3	34	1.03	350	56	V.I.R.	Lead Covered
"E2"	"	"	0.3	34	1.03	420	46	V.I.R.	"
"E3"	"	"	0.25	34	0.93	310	284	V.I.R.	"
"R"	Refry. Switchboard	"	0.45	91	1.03	940	400 Pnt. 300 S.H.H.	V.I.R.	Braided & Armoured
	WIRELESS	1 Pa. Pole	0.7	4	0.52	4	828	V.I.R.	Lead Covered
	SEARCHLIGHT	1 Pa. Pole	0.6	19	0.64	60	852	V.I.R.	Temp. Braided
	MASTHEAD LIGHT FORECAST. MAINWIND.	1 Pa. Pole	0.02	3	0.06	45	480	V.I.R.	(Conduct)
	SIDE LIGHTS	1 Pa. Pole	0.02	3	0.09	45	950	V.I.R.	Lead Covered
	COMPASS LIGHTS	1 Pa. Pole	0.02	3	0.09	15	266	V.I.R.	"
	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	2	0.3	19	0.52	41	192	V.I.R.	Lead Covered
	GENERAL SERVICE PUMP	✓	✓	✓	✓	✓	✓	✓	✓
	EMERGENCY BILGE PUMP	1	0.15	34	0.42	85	542	V.I.R.	Armoured & Braided
	SANITARY PUMP	2	0.15	34	0.42	125	82	V.I.R.	Lead Covered
	CIRC. SEA WATER PUMPS	2	0.225	4	0.64	32	40	V.I.R.	"
	CIRC. FRESH WATER PUMPS	✓	✓	✓	✓	✓	✓	✓	✓
	AIR COMPRESSOR	✓	✓	✓	✓	✓	✓	✓	✓
	FRESH WATER PUMP	2	0.225	4	0.64	32	84	V.I.R.	Lead Covered
	ENGINE TURNING GEAR	2	0.45	19	0.42	96	88	V.I.R.	"
	ENGINE REVERSING GEAR	✓	✓	✓	✓	✓	✓	✓	✓
	LUBRICATING OIL PUMPS	2	0.2	34	0.83	132	164	V.I.R.	Lead Covered
	OIL FUEL TRANSFER PUMP	2	0.3	19	0.44	32	140	V.I.R.	"
	WINDLASS, Capstan	2	0.4	61	0.93	240	240	V.I.R.	"
	WINCHES, FORWARD	2 Pa. Pole	0.1	19	0.52	98	112	V.I.R.	Temp. Braided - Conduct
	WINCHES, AFT	2 Pa. Pole	0.1	19	0.52	98	124	V.I.R.	Lead Covered
	STEERING GEAR	2	0.3	34	1.03	224	530	V.I.R.	Armoured & Braided
	WORKSHOP MOTOR	1	0.145	4	0.52	20	124	V.I.R.	Lead Covered
	VENTILATING FANS	2 Pa. Pole	0.2	various	✓	8	46	V.I.R.	"
	Steering Gear 40 H.P.	1	0.3	34	1.03	144	530	V.I.R.	Armoured & Braided
	Emergency Dynamometer Van Radiator	2	0.06	19	0.64	84	312	V.I.R.	Lead Covered
	Refrigerator Fans	1	0.04	4	0.06	14	24	V.I.R.	"
	1st Mass Passenger lift	1	0.04	4	0.06	14	20	V.I.R.	Temp. Braided
	Stores lift	2	0.03	19	0.44	32	120	V.I.R.	"
	Bilge Pumps 2 H.P.	1	0.093	4	0.29	8	82	V.I.R.	Lead Covered
	Refrigerators	3	0.04	19	0.83	48	20	V.I.R.	"
	Bath Pump	1	0.04	19	0.83	48	20	V.I.R.	"
	Hotwell Pumps	2	0.45	19	0.42	84	252	V.I.R.	"

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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.

For **VICKERS LIMITED.**  
*S. W. Jan.*  
 Director.

Electrical Engineers.

Date 10/11/24.

**COMPASSES.**

Distance between electric generators <sup>LIFT</sup> or motors and standard compass 50 ft  
 Distance between electric generators <sup>LIFT</sup> or motors and steering compass 40 ft

The nearest cables to the compasses are as follows:—

A cable carrying 6 Ampères 15 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. Jan.*  
 Director.

Builder's Signature.

Date 10/11/24.

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 mainly fitted at Barrow and is to be completed at London where the trials are to take place)

The installation is now complete, has been tried under working conditions and found to be working satisfactorily

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

*J. W. D.*  
 18/12/24

Total Capacity of Generators 1236 Kilowatts

The amount of Fee ... ..	£ 62 : 8	:	When applied for,
			<u>24 Dec 1924.</u>
Travelling Expenses (if any) : £	:	:	When received,
			<u>4 Nov 1924.</u>

*Wm. Cowie & A. W. Palmer*  
 Surveyors to Lloyd's Register of Shipping.

Committee's Minute

Assigned

Im. 3.22.—Transfer.  
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)



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Motor Conductors

Description	No of Motor	Effective Area of Each Conductor Sq. inches	Composition of Strand		Total Max Current Amps	Approx Length lead return feet	Insulated with	How Protected
			No	Diameter				
Bjins Pumps	11	.0225	4	.064	32	60	V.T.R.	Lead Covered
Main Air Pumps	2	.15	34	.072	132	104	"	" "
Auxiliary Air Pump	1	.06	19	.064	60	112	"	" "
Auxiliary Air Pump	1	.045	19	.072	81	80	"	" "
Oil Purifier Pumps	1	.003	3	.036	6	80	"	" "
De Laval Pump	1	.003	3	.036	2	108	"	" "
Drain Tank Pump	1	.003	3	.036	2	204	"	" "
Blower Fans	2	.003	3	.036	4	24	"	" "
Boat Winch 6 HP	1	.0225	4	.064	24	246	"	" "
Boat Winches 12 1/2 HP	6	.04	19	.052	50	242	"	" "
Cent Fans 3 1/2 HP	2	.045	4	.029	14	68	"	" "
Cent Fans 5 1/2 HP	4	.045	4	.036	22	204	"	" "
Ozone Rotary Combs	1	.003	3	.036	5	40	"	" "
Laundry Motor 2 HP	4	.003	3	.036	8	100	"	" "
Washing Machine 3 HP	1	.003	3	.036	12	60	"	" "
Wood Draught Fans	6	.045	19	.072	89	160	"	Armoured & Braided
Oil Fuel Pumps	4	.0145	4	.052	20	148	"	Lead Covered
Tractor Motor	1	.003	3	.036	1	20	"	" "
Dish Washer	2	.003	3	.036	8	96	"	" "
Potato Peeler	1	.002	3	.029	3	20	"	" "
Roll Chaffer	1	.003	3	.036	4	60	"	" "
Silver Burnisher	1	.002	3	.029	2	112	"	" "
Emulsifier	1	.002	3	.029	4	68	"	" "
Whisking Machine	1	.002	3	.029	4	60	"	" "
Ice Cream Machine	1	.0045	4	.029	12	42	"	" "
Dough Mixer	1	.004	4	.036	16	44	"	" "
Punkah Fans	2	.003	3	.036	3	80	"	" "
Punkah Fans	2	.0045	4	.029	8	112	"	" "
Punkah Fans	4	.002	3	.029	2	112	"	" "
Cent Fans 3 HP	2	.0045	4	.036	12	42	"	" "

Heater Conductors

2 K.W. Radiator	2	.003	3	.036	9	120	V.T.R.	Hemp Braided
2 K.W. Hot Plates	2	.003	3	.036	9	120	"	" "
2 K.W. Hot Press	2	.0045	4	.029	12.5	42	"	" "
3.5 K.W. Griddle Plate	2	.0045	4	.029	15	80	"	" "
5 K.W. Hot Water Man.	2	.004	4	.036	22.5	80	"	" "
Laundry Irons	2	.002	3	.029	4.5	20	"	Lead Covered
Cuff & Collar Heater	2	.003	3	.036	10	92	"	" "
10 H.W. Grills	2	.003	19	.044	45.5	100	"	" "
18.8 K.W. Cozons	2	.045	19	.072	85.4	100	"	" "
20 K.W. Cozons	2	.1	19	.088	91	104	"	" "

