

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 11 NOV 1924

Date of writing Report 5th Nov. 1924 When handed in at Local Office

Port of Barrow-in-Furness

No. in Survey held at

Barrow

Date, First Survey

16th June

Last Survey

16th Oct

1924

Reg. Book.

79141 on the Steam screw steamer "Orama"

(Number of Visits 13)

Tons { Gross 19444
Net 11942

Built at

Barrow

By whom built

Bickers h^d.

Yard No. 598

When built 1924

Owners

Crescent Steam Navigation Co^ld.

Port belonging to

Barrow

Electric Light Installation fitted by

Bickers h^d

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

Are the lubricating arrangements of the generators as per Rule

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 % & R% release (1 pole electrically operated) Equalizer switch has no automatic features: Branch Circuits: 40 Ampere Switchboards DP tandem circuit breaker with time lag % 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

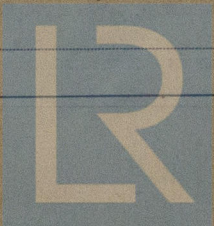
with fuse and switch between each pole and earth.

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



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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 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 chattering & laminar*

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*

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 Dynamo Room 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*, 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 *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 *Yes*, if not of this type, state distance of the combustible material horizontally or vertically above the motors *18" horizontally and vertically enclosed*

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.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	3	400	220	1818	500	Grand Steam Turbine		
AUXILIARY	✓	✓	✓	✓	✓	✓		
EMERGENCY	1	36	220	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. Amps.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	MAIN GENERATORS.	5	1.125	Bushes	4 1/2 x 1 1/4	9.07	34 each.	Enamel insulation	Lead lined
	AUXILIARY GENERATOR	2 Pa. Poles	✓	✓	✓	✓	✓	✓	✓
	EMERGENCY GENERATOR	1 Pa. Pole	✓	34	0.03	164	30	V.I.R.	Braided & Armoured
	ROTARY TRANSFORMER								
	AUXILIARY SWITCHBOARDS								
	ENGINE ROOM								
"EJ2"	BOILER ROOM	1 Pa. Pole	✓	19	0.04	60	330	V.I.R.	Lead lined
"A"	Auxiliary Switchboard	2 Pa. Poles	✓	34	0.03	590	400 S.H.A.	V.I.R.	Braided & Armoured
"B"	"	"	✓	34	0.03	620	416 S.H.A.	V.I.R.	"
"C"	"	"	✓	34	0.03	400	162 Pnt	V.I.R.	"
"D"	"	"	✓	34	0.03	590	324 Pnt	V.I.R.	"
"E"	Emergency Switchboard	1 Pa. Pole	✓	34	0.03	164	424 S.H.A.	V.I.R.	"
"F1"	Van Yuss Boards	2 Pa. Poles	✓	34	0.03	240	292 main 492 Emergency	V.I.R.	"
"F2"	"	"	✓	34	0.03	240	184	V.I.R.	"
"G"	Galley Switchboard	"	✓	61	0.03	435	144	V.I.R.	"
"ER1"	Engine Room Board	"	✓	34	0.03	350	56	V.I.R.	Lead lined
"ER2"	"	"	✓	34	0.03	420	46	V.I.R.	"
"ER3"	"	"	✓	34	0.03	340	284	V.I.R.	"
"R"	Refry. Switchboard	"	✓	91	0.03	940	400 Pnt 300 S.H.A.	V.I.R.	Braided & Armoured
	WIRELESS	1 Pa. Pole	✓	4	0.02	4	328	V.I.R.	Lead lined
	SEARCHLIGHT	1 Pa. Pole	✓	19	0.04	60	352	V.I.R.	Arm. Braided
	MASTHEAD LIGHT FORECAST	1 Pa. Pole	✓	3	0.03	45	480	V.I.R.	" (Conduct)
	SIDE LIGHTS	1 Pa. Pole	✓	3	0.03	45	950	V.I.R.	Lead lined
	COMPASS LIGHTS	1 Pa. Pole	✓	3	0.03	45	564 92	V.I.R.	"
	POOP LIGHTS						20	V.I.R.	"
	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. Amps.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	BALLAST PUMP								
	MAIN BILGE LINE PUMPS	2	0.03	19	0.02	41	192	V.I.R.	Lead lined
	GENERAL SERVICE PUMP								
	EMERGENCY BILGE PUMP	1	0.03	34	0.02	58	542	V.I.R.	Armoured & Braided
	SANITARY PUMP	2	0.03	34	0.02	128	82	V.I.R.	Lead lined
	CIRC. SEA WATER PUMPS	2	0.225	4	0.04	32	40	V.I.R.	"
	CIRC. FRESH WATER PUMPS								
	AIR COMPRESSOR								
	FRESH WATER PUMP	2	0.225	4	0.04	32	84	V.I.R.	Lead lined
	ENGINE TURNING GEAR	2	0.05	19	0.02	96	88	V.I.R.	"
	ENGINE REVERSING GEAR								
	LUBRICATING OIL PUMPS	2	0.03	34	0.02	132	164	V.I.R.	Lead lined
	OIL FUEL TRANSFER PUMP	2	0.03	19	0.04	32	140	V.I.R.	"
	WINDLASS, Capstan	2	0.04	61	0.03	240	240	V.I.R.	"
	WINCHES, FORWARD	2	0.03	19	0.02	98	112	V.I.R.	Arm. Braided & Conduct
	WINCHES, AFT	2	0.03	19	0.02	98	120	V.I.R.	Lead lined
	STEERING GEAR	2	0.03	34	0.02	224	530	V.I.R.	Armoured & Braided
	WORKSHOP MOTOR	1	0.045	4	0.02	20	124	V.I.R.	Lead lined
	VENTILATING FANS	2	0.03	19	0.02	144	530	V.I.R.	Armoured & Braided
	Steering Gear	1	0.03	34	0.02	84	312	V.I.R.	Lead lined
	Emergency Dynamo Room Fan	2	0.03	19	0.02	14	24	V.I.R.	"
	San Radiator	1	0.04	19	0.02	48	120	V.I.R.	Arm. Braided
	Refrigerator Fans	2	0.03	19	0.02	14	20	V.I.R.	"
	1st Mass Passenger Lift	2	0.03	19	0.02	32	120	V.I.R.	"
	Stores Lift	2	0.03	19	0.02	8	52	V.I.R.	Lead lined
	Bilge Pumps	2	0.03	19	0.02	440	80	V.I.R.	"
	Refrigerators	3	0.03	19	0.02	48	20	V.I.R.	"
	Bath Pump	1	0.03	19	0.02	84	252	V.I.R.	"
	Hot Water Pumps	2	0.03	19	0.02	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 ^{LIFT}generators or motors and standard compass 50 ft

Distance between electric ^{LIFT}generators 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 1/2 degrees on all course in the case of the standard compass, and 1/2 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, 24 Dec 1924.
Travelling Expenses (if any) £	:	:	When received, 4 Jan 1925.

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

Committee's Minute

Assigned

Im. 322.—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 Motors	Effective Area of Each Conductor Sq. inches	Composition of Strand		Total Max. Current Amps	Approx. Length feet	Insulated with	How Protected
			No.	Diameter				
Brine Pumps	11	.0225	4	.064	32	60	V.I.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	.032	50	242	"	" "
Cent Fans 3 1/2 HP.	2	.045	4	.029	14	68	"	" "
Cent Fans 5 1/2 HP.	4	.0445 according to spec.	4	.036	22	204	"	" "
Ozone Rotary Compressor	1	.003	3	.036	5	40	"	" "
Laundry Motors 2 HP.	4	.003	3	.036	8	100	"	" "
Washing Machine 3 HP.	1	.003	3	.036	12	60	"	" "
Forced Draught Fans	6	.045	19	.072	89	160	"	Armoured & Braided
Oil Fuel Pumps	4	.0145	4	.032	20	148	"	Lead Covered
Yaster Motor	1	.003	3	.036	1	20	"	" "
Rich 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.I.R.	Armoured & 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 Hrn.	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. Cores	2	.045	19	.072	85.4	100	"	" "
20 K.W. Cores	2	.1	19	.083	91	104	"	" "