

Rpt 13.

No. 51471

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Date of writing Report 28. 4. 1931 When handed in at Local Office 23. 5. 1931 Port of GLASGOW. Received at London Office 27 MAY 1931

No. in Survey held at GLASGOW. Date, First Survey 3. 2. 31 Last Survey 24. 4. 1931
Reg. Book. (Number of Visits.....)91865 on the M.V. "ORAWA" Tons { Gross 10107
Net

Built at GLASGOW By whom built ALEX. STEPHEN & SONS LTD. and No. 532 When built 1931

Owners NEW ZEALAND SHIPPING CO. LTD. Port belonging to PLYMOUTH.

Electric Light Installation fitted by ALEX. STEPHEN & SONS LTD. Contract No. 532 When fitted 1931

Is the Vessel fitted for carrying Petroleum in bulk No.

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 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 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 Two Port & Two Starbd. Side of Engine Rm.

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 Switchboard Platform Ford. End of Engine Rm.

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, 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 insulated from the slab

with mica or micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework Bushed with Micanite

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: 3-1400 Amp., 1-450 Amp.

T.P. Circuit Breakers (centre pole as equalizer) for Main Generators, Each Outgoing Circuit up to 200 Amps. fitted with D.P. Switch & Fuses, 200 Amp. & over fitted with D.P. Circuit Breakers.

Instruments on main switchboard 4 ammeters 2 voltmeters 1 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 earth indicating

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.

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Cables: Single, twin, concentric, or multicore Single 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 Lighting 4.5 Volts, Power Heating 75V d.c.

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 Varnished Cambrian cables sealed & taped

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 L.L.B. & B cables clipped to bulkheads in accommodation, L.L.B. & B cables run in Troughing on open Decks & protected with gal. Iron Plating

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 Nil.

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 for L.L. cables, Fibre for L.L.B. & B cables.

Earthing Connections, state what earthing connections are fitted and their respective sectional areas Metallic Sheathing of cables bonded to earth with clips and bonding glands.

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 Battery

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

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 1, whether fixed or portable Portable, are their fittings as per Rule Yes

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 Yes, are the coils self-contained and readily removable for replacement Yes except vertical motor

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 Totally enclosed if not of this type, state distance of the combustible material horizontally or vertically above the motors — and —

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 Nil

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	3	305	220	1390	270	Diesel Engines	Diesel Oil	over 150° F.	
AUXILIARY	1	100	220	450	1500	Steam Engine (Turbine)			
EMERGENCY	1								
Battery	1	220	270	Amp. hour		Chloride Sulphuric Acid			
ROTARY TRANSFORMER									

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	2	8459	127	0.93	1390	1466	150	Cambrie	L.L.B.	
EQUALISER CONNECTIONS	1	8459	127	0.93	—	733	75	"	"	
AUXILIARY GENERATOR ...	1	6620	91	0.93	450	561	222	"	"	
EMERGENCY Generator Battery										
ROTAry } MOTOR	2	02214	7	0.64	30	68	300	"	"	
TRANSFORMER } GENERATOR...										
ENGINE ROOM... ..	1	02214	7	0.64	58	68	60	"	"	
BOILER ROOM... ..								"	"	
AUXILIARY SWITCHBOARDS ...										
Navigation Lights	1.	00701	7	0.36	12	24	300	V.I.R.	"	
Engine's Office Lights	1.	01462	7	0.52	32	37	250	"	"	
Crew's Services	1.	01046	7	0.44	15	31	250	"	"	
Navigation Essential	1.	00701	7	0.36	8	24	300	"	"	
Engine's Office "	1	01462	7	0.52	17	37	250	"	"	
ACCOMMODATION										
Engine Room "	1	00455	7	0.23	10	18.2	60	"	"	
WIRELESS	1	00701	7	0.36	6.8	24	432	"	"	
SEARCHLIGHT	1	00455	7	0.23	2.2	18.2	80	"	"	
MASTHEAD LIGHT	1	00134	3	0.23	2.8	7.8	591	"	"	
SIDE LIGHTS	1	00134	3	0.23	2.8	7.8	150	"	"	
COMPASS LIGHTS	1	00134	3	0.23	2.8	7.8	45	"	"	
POOP LIGHTS	1	00134	3	0.23	2.8	7.8	800	"	"	
CARGO LIGHTS Storage	1	02214	7	0.64	44	68	270	Cambrie	L.L.B.	
ARC Lamps " " aft	1	0600	13	0.64	82	122	300	"	"	
HEATERS	1	14780	37	0.72	195	222	210	"	"	

MOTOR CONDUCTORS.										
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulation with	HOW PROTECTED.
		No. Per Pole.	Total Effective Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	1	0600	13	064	85	122	221	Cambrian	L.L.B. & B.
MAIN BILGE LINE PUMPS	2	1	03960	13	052	70	34	255	"	"
GENERAL SERVICE PUMP	1	1	0600	13	064	85	122	204	"	"
EMERGENCY BILGE PUMP										
SANITARY PUMP	1	1	0600	13	064	85	122	135	"	"
CIRC. SEA WATER PUMPS	3	1	11680	37	064	174	189	105	"	"
CIRC. FRESH WATER PUMPS...										
AIR COMPRESSOR	2	1	74350	91	103	600	664	195	"	"
FRESH WATER PUMP	2	1	00455	7	023	12	18.2	30	V.I.R.	"
ENGINE TURNING GEAR...	2	1	02214	7	064	58	68	180	Cambrian	"
OIL SEPARATORS	3	1	02214	7	064	58.2	68	60	"	"
ENGINE REVERSE GEAR	3	1	03960	13	052	66	34	120	"	"
LUBRICATING OIL PUMPS	2	1	03960	13	052	54	34	30	"	"
OIL FUEL TRANSFER PUMP...	1	1	30240	37	103	232	346	50	"	"
WINDLASS ... RING	1	1	30240	37	103	270	346	900	"	"
WINCHES, FORWARD MAIN	10	1	30240	37	103	200	346	100	"	"
WINDLASS BOOSTER	1	1	30240	37	103	270	346	370	"	"
WINCHES AFT RING MAIN	10	1	30240	37	103	270	346	370	"	"
Ring Main	3	1	07532	13	072	77	141	381	"	"
"	3	1	0600	13	064	85	122	150	"	"
"	4	1	07532	13	072	128	141	450	"	"
STEERING GEAR—										
(a) MOTOR PORT GENERATOR...	1	1	07532	13	072	96	141	750	"	"
(b) MAIN MOTOR STAR	1	1	07532	13	072	96	141	750	"	"
WORKSHOP MOTOR	1	1	01462	7	052	23.2	37	141	V.I.R.	"
VENTILATING FANS	4	1	0600	13	064	74.2	122	270	Cambrian	"
Boat Winches	2	1	02214	7	064	58	68	270	"	"
Domestic M/c Bld.	1	1	10080	13	083	130	172	156	"	"
Crane (Eng. Rm.)	3	1	01462	7	052	28	37	141	V.I.R.	"
Oil Heater & Blower	1	1	00701	7	036	14.8	24	120	"	"
Oil Compressor	2	1	74350	91	103	640	664	66	Cambrian	"
Borine Pumps	4	1	03960	13	052	63	34	102	V.I.R.	"
"	1	1	01462	7	052	31	37	102	"	"

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.

ALEXANDER STEPHEN & SONS LIMITED

Electrical Engineers.

Date 21. 5. 31

A. M. Stephen

COMPASSES.

Distance between electric generators or motors and standard compass

85 feet

Distance between electric generators or motors and steering compass

80 feet

The nearest cables to the compasses are as follows:—

A cable carrying 36 Ampères 10 feet from standard compass 8 feet from steering compass.

A cable carrying 55 Ampères 10 feet from standard compass 12 feet from steering compass.

A cable carrying 81 Ampères 14 feet from standard compass 8 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 No degrees on any course in the case of the standard

compass, and No degrees on any course in the case of the steering compass.

ALEXANDER STEPHEN & SONS LIMITED

A. M. Stephen

Builder's Signature.

Date 21. 5. 31.

Is this installation a duplicate of a previous case

Yes

If so, state name of vessel

"ORARI"

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 electrical spare gear for the refrigerating plant has been checked on board and found to be correct. The materials and workmanship were found to be good and sound.

Elec. Light

27/5/31

Total Capacity of Generators 1015 Kilowatts.

The amount of Fee £ 56 : 17 : 6

When applied for,

5/5/31

Travelling Expenses (if any) £

When received,

22/5/31

Committee's Minute GLASGOW 26 MAY 1931

Assigned

Elec Light



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Foundation