

Rpt. 13.

No. 92125

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Date of writing Report 16 JUNE 1927 When handed in at Local Office 16 JUNE 1927 Port of LIVERPOOL

No. in Survey held at Birkenhead Date, First Survey 17.3.26 Last Survey 30.5.1927  
 Reg. Book. 87982 on the 5.5 "Arandora" (Number of Visits 18)

Tons { Gross 12837.61  
 Net 7818.20

Built at Birkenhead By whom built Cammell Laird & Co. L<sup>td</sup> Yard No. 921 When built 1927

Owners Messrs Blue Star Line (1920) L<sup>td</sup> Port belonging to London

Electric Light Installation fitted by Sunderland Forge & Eng<sup>s</sup> Co. L<sup>td</sup> Contract No. \_\_\_\_\_ When fitted 1927

**System of Distribution**

Double Wire

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. 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 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** Engine Room Stbd

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** Engine Room Stbd.

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** Triple Pole, O.L. & R.C.

Circuit Breakers for Generators — 3<sup>rd</sup> Pole to act as equaliser, D.P.O.L

Circuit Breakers + D.P. Switches + Fuses for Feeder Circuits.

Instruments on main switchboard 5 ammeters 2 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 Earth lamps, switches + fuses on each pole.

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

*BM*

**Insulation of Cables**, state type of cables, single or twin Single twin 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 4.5 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 —

**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 Main Cables - L.C. + B. secured with Galv. Iron Clips. Accommodation Cables - L.C. + B. secured with Brass Clips.

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 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 Lead

**Earthing Connections**, state what earthing connections are fitted and their respective sectional areas —  
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 Petrol-Paraffin Generating Set + Switchboard in Emergency Dynamo Room.

**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 —  
are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected —  
—, how are the cables led —  
where are the controlling switches situated —

**Searchlight Lamps**, No. of —, whether fixed or portable —, 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 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 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 —, 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 as per Rule Yes

**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 —

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	200	220	910	375	Compound Steam Engine		
AUXILIARY ... ..								
EMERGENCY ... ..	1	25	220	114	800	Petrol-Paraffin Engine	Paraffin (Petrol-Starting)	
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. Ampères.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	MAIN GENERATOR...	3	1'25	127	'112	910 ✓	80	Varn <sup>2</sup> -Cambric	L.C.+B.
	AUXILIARY GENERATOR								
	EMERGENCY GENERATOR	2	'1	19	'083	114 ✓	20	V.I.R.	-do-
	ROTARY TRANSFORMER...								
	AUXILIARY SWITCHBOARDS								
	ENGINE ROOM ... ..	2	'0225	7	'064	34 ✓	20	-do-	-do-
	BOILER ROOM ... ..								
	Accom. Bidge Prom Dks	2	'15	37	'072	150 ✓	240	-do-	-do-
	" Upper Dk	2	'075	19	'072	90 ✓	230	-do-	-do-
	" Eng <sup>2</sup> = Crew	2	'06	19	'064	79 ✓	230	-do-	-do-
	Cargo	2	'0225	7	'064	25 ✓	230	-do-	-do-
	Boat Lights	2	'0045	7	'029	6'7 ✓	444	-do-	-do-
	Nav <sup>2</sup> = Emergency	2	'04	19	'052	59 ✓	114	-do-	-do-
	Emergency Supply	2	'1	19	'083	114 ✓	290	-do-	-do-
	WIRELESS ... ..	2	'007	7	'036	14 ✓	246	-do-	-do-
	SEARCHLIGHT ... ..								
	MASTHEAD LIGHT...	2	'002	3	'029	45 ✓	600	-do-	-do-
	SIDE LIGHTS ... ..	2	'002	3	'029	45 ✓	90	-do-	-do-
	COMPASS LIGHTS ... ..	2	'002	3	'029	1 ✓	35	-do-	-do-
	POOP LIGHTS ... ..								
	CARGO LIGHTS ... ..								
	ARC LAMPS ... ..								
	HEATERS ... ..	2	'007	7	'036	13 ✓	452	-do-	-do-

MOTOR CONDUCTORS.

Ref. No.	DESCRIPTION.	No. of Motors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Ampères.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	BALLAST PUMP ... ..								
	MAIN BILGE LINE PUMPS ... ..								
	GENERAL SERVICE PUMP ... ..								
	EMERGENCY BILGE PUMP ... ..	1	'04	19	'052	56 ✓	340	V.I.R.	L.C.+B
	SANITARY PUMP ... ..								
	CIRC. SEA WATER PUMPS ... ..								
	CIRC. FRESH WATER PUMPS ... ..								
	AIR COMPRESSOR ... ..								
	FRESH WATER PUMP ... ..								
	ENGINE TURNING GEAR ... ..								
	ENGINE REVERSING GEAR ... ..								
	LUBRICATING OIL PUMPS ... ..								
	OIL FUEL TRANSFER PUMP ... ..								
	WINDLASS ... ..								
	WINCHES, FORWARD ... ..								
	WINCHES, AFT ... ..								
	STEERING GEAR ... ..								
	WORKSHOP MOTOR ... ..	1	'007	7	'036	20 ✓	100	-do-	-do-
	VENTILATING FANS ... ..	14	'1	19	'083	106 ✓	230	-do-	-do-
	Oil Purifier	1	'0045	7	'029	8 ✓	50	-do-	-do-
	Refrig. Aux <sup>ies</sup>	12	'3	37	'103	508* ✓	124	-do-	-do-
	Galley Gear	7	'1	19	'083	98'25 ✓	480	-do-	-do-
	Laundry Gear	4	'0225	7	'064	44 ✓	440	-do-	-do-
	Forced Draught Fans	2	'25ea	37	'093	208ea ✓	90	-do-	-do-

\* "Allen" load. Max. Working load = 240 Amps.

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.

Sunderland Forge Engineering Co. Ltd. Electrical Engineers. Date 1-6-27  
 pro Mr. Prichard

COMPASSES.

Distance between electric generators or motors and standard compass 130ft.  
 Distance between electric generators or motors and steering compass 130ft.

The nearest cables to the compasses are as follows:—

A cable carrying 3.25 Ampères 12 feet from standard compass 12 feet from steering compass.

A cable carrying .1 Ampères 10 feet from standard compass led into feet from steering compass.

A cable carrying .1 Ampères led into feet from standard compass 10 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° E. degrees on all courses N-E, S-E, N-W, S-W in the case of the standard compass, and 1° E degrees on N-N by E, S-S by E, N-N by W, S-S by W in the case of the steering compass.

GAMMELL LAIRD AND COMPANY LIMITED.

J. W. Laird Builder's Signature. Date 11th June 1927

LOCAL SECRETARY.

Is this installation a duplicate of a previous case Yes If so, state name of vessel S.S. "Almeda"

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

This installation has been fitted under Special Survey and is in accordance with the Rule requirements. It was found satisfactory under full working conditions and in our opinion the vessel is eligible for notation "Elec. light" in Register book.

It is submitted that

Elec light.

J.S.A. 24/6/27

Total Capacity of Generators 425 Kilowatts

The amount of Fee ... £ 42 : 2 : 6

When applied for, 1/6/1927

Travelling Expenses (if any) £ ✓ :

When received, 25.6.27

W.S. Shields & J.D. Milton Surveyors to Lloyd's Register of Shipping.

Committee's Minute LIVERPOOL 17 JUNE 1927

Assigned Elec. light.

Im. 22.—Transfer. (The Surveyors are requested not to write on or below the space for Committee's Minute.)

LR-FAF-T011-15 2/2