

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

No. 96691

22 FEB 1930

Date of writing Report

19

When handed in at Local Office

21 FEB. 1930

Received at London Office

No. in Survey held at

Birkenhead

Date, First Survey

Port of

LIVERPOOL

Last Survey

Feb 9<sup>th</sup>

1930

(Number of Visits.....)

31

Reg. Book.

42296 on the

"SULTAN STAR"

Tons

Gross 12700

Net

Built at

Birkenhead

By whom built

Messrs Cammell Laird &amp; Co

Yard No.

955

When built

1929/30

Owners

Messrs Blue Star Line (1920) Ltd

Port belonging to

London

Electric Light Installation fitted by

The Sunderland Forge &amp; Eng Co Ltd

Contract No.

When fitted

1929/30

Is the Vessel fitted for carrying Petroleum in bulk

No

## System of Distribution

Double wire

Pressure of supply for Lighting

220

volts, Heating

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

Main Engine Room Starboard Side

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

Main Engine Room Starboard Side

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

, 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

yes

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

Triple Pole / Load

+ Reverse Current Circuit Breakers 3<sup>rd</sup> Pole Equaliser for main Generators + D.P. Switches

+ Fuses for Feeder Circuits

Instruments on main switchboard

2

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 Testing Lamps Switches &amp; 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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W448-0223 (172)undation



**Cables:** Single, twin, concentric, or multicore single & twin are the cables insulated and protected as per Tables IV or V of the Rules yes  
5 Kolls

**Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load

**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

**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

**Support and Protection of Cables,** state how the cables are supported and protected main cables Lead covered & Braided secured with S.I. clips & Accommodation Lead covered & Braided 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 VIII yes

**Refrigerated Chambers,** if lights are fitted, are the cables and fittings in accordance with the special requirements \_\_\_\_\_

**Joints in Cables,** state if any, and how made, insulated, and protected none made

**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

**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 \_\_\_\_\_

**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 \_\_\_\_\_

**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** one, 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  
 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 \_\_\_\_\_  
 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 \_\_\_\_\_, 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 \_\_\_\_\_

**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.	Amperes.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN ...	2	250	220	1135	350	Steam Engine.		
AUXILIARY ...								
EMERGENCY ...								
ROTARY TRANSFORMER								

## GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		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 S. (each) ...	2	1.2	91	.093	1135	1122		Varnished Canvas	Braided Jall.
EQUALISER CONNECTIONS ...	1	.6	91	.093				Varnished Canvas	Braided Jall.
AUXILIARY GENERATOR ...									
EMERGENCY GENERATOR ...									
ROTARY TRANSFORMER MOTOR GENERATOR ...									
ENGINE ROOM ...	1	.01	7	.044	218	31		V.I.R.	LC&B.
BOILER ROOM ...	1	.01	7	.044	218	31		V.I.R.	LC&B.
AUXILIARY SWITCHBOARDS ...	1	.10	19	.083	129	118		V.I.R.	LC&B.
E.R. Auxiliaries Refrigerating Mc	2	.4	37	.083	634	532		V.C.	LC&B.
navigation	1	.003	3	.036	243	12		V.I.R.	LC&B.
ACCOMMODATION	1	.0225	7	.064	2906	46		V.I.R.	LC&B.
Captain & Officers	1	.01	7	.044	30	31		V.I.R.	LC&B.
Engineers & Crews	1	.01	7	.044	37.32	31		V.I.R.	LC&B.
Ch. Accommodations									
WIRELESS	1	.007	7	.036	14	24		V.I.R.	LC&B.
SEARCHLIGHT & Cargo	1	.06	19	.064	60	83		V.I.R.	LC&B.
MASTHEAD LIGHT	1	.002	3	.029	19	7.8		V.I.R.	LC&B.
SIDE LIGHTS	1	.002	3	.029	19	7.8		V.I.R.	LC&B.
COMPASS LIGHTS	1	.002	3	.029	19	7.8		V.I.R.	LC&B.
POOP LIGHTS									
CARGO LIGHTS	1	.003	3	.036	1.8	12		V.I.R.	LC&B.
ARC LAMPS									
HEATERS									

## MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		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.			
BALLAST PUMP ...										
MAIN BILGE LINE PUMPS ...										
GENERAL SERVICE PUMP ...										
EMERGENCY BILGE PUMP ...										
SANITARY PUMP ...										
CIRC. SEA WATER PUMPS ...	2	1	.06	19	.064	7.5	83		V.I.R.	LC&B.
CIRC. FRESH WATER PUMPS ...										
AIR COMPRESSOR ...										
FRESH WATER PUMP ...	2	1	.0225	7	.064	26	46		V.I.R.	LC&B.
ENGINE TURNING GEAR ...										
ENGINE REVERSING GEAR ...										
LUBRICATING OIL PUMPS ...										
OIL FUEL TRANSFER PUMP ...										
WINDLASS ...										
WINCHES, FORWARD ...										
WINCHES, AFT ...										
STEERING GEAR—										
(a) MOTOR GENERATOR ...	2	1	.10	19	.083	110	118		V.I.R.	LC&B.
(b) MAIN MOTOR ...	1	1	.007	7	.036	21	24		V.I.R.	LC&B.
WORKSHOP MOTOR ...										
VENTILATING FANS										
Forced Draught Fan	2	1	.2	37	.083	264	266		V.C.	LC&B.
Cooler Fans.	3	1	.007	7	.036	22	24		V.I.R.	LC&B.
	10	1	.007	7	.036	11	24		V.I.R.	LC&B.
	3	1	.007	7	.036	8	24		V.I.R.	LC&B.
	2	1	.007	7	.036	20	24		V.I.R.	LC&B.
Ast. Hoists	4	1	.06	19	.064	7.5	83		V.I.R.	LC&B.
Brine Pump	1	1	.003	3	.036	6.75	12		V.I.R.	LC&B.



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.

*per The Sunderland Forge & Eng Co Ltd*  
*W. H. Arthur*

Electrical Engineers.

Date *7<sup>th</sup> Feb 1930*

#### COMPASSES.

Distance between electric generators or motors and standard compass

*172 ft*

Distance between electric generators or motors and steering compass

*168 ft*

The nearest cables to the compasses are as follows:—

A cable carrying *2.43* Amperes *8* feet from standard compass *10* feet from steering compass.

A cable carrying *09* Amperes *8* feet from standard compass *Led into* feet from steering compass.

A cable carrying *09* Amperes *Led into* 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 *1/2 W* degrees on *N.E. by N - E.S.E. - S.S.E. - S.W. by W* course in the case of the standard compass, and *1 E* degrees on *E.S.E. - S.S.E. - S.W. by W* course in the case of the steering compass.

GAMMELL LAIRD AND COMPANY LIMITED.

*J. W. Laird*  
SECRETARY

Builder's Signature.

Date

Is this installation a duplicate of a previous case *h* If so, state name of vessel *✓*

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

*This installation has been satisfactorily fitted on board in accordance with the Rules. It has been examined under working conditions & found satisfactory, & is eligible in my opinion for record of 'Elec Light' in Register book.*

*Elec. Light.*

*J. H. 25/2/30*

Total Capacity of Generators *500* Kilowatts.

The amount of Fee ... *£44 0 0*

When applied for,

*20 FEB 1930*

Travelling Expenses (if any) £

When received,

*18.3.30*

*J. H. Milton*

Surveyor to Lloyd's Register of Shipping.

Committee's Minute *LIVERPOOL 21 FEB. 1930*

Assigned *Elec. Light.*

*FRI 15 APR 1930*



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