

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 74 JAN 1936

Date of writing Report

19

When handed in at Local Office

3-1-36

19

Port of Belfast

No. in  
Reg. Book.

Survey held at Belfast

Date, First Survey

1<sup>st</sup> Aug 1935

Last Survey

20 Dec 1935

(Number of Visits 25)

on the Steel Twin Screw Motor Vessel "Empire Star"

Tons {  
Gross  
Net

Built at Belfast

By whom built Messrs Harland &amp; Wolff Ltd

Yard No. 957

When built 1935

Owners Blue Star Line Ltd.

Port belonging to

Electric Light Installation fitted by Messrs Harland &amp; Wolff Ltd.

Contract No. 957 When fitted 1935

Is the Vessel fitted for carrying Petroleum in bulk

No.

System of Distribution

Two Wire Direct Current

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

in Motor Room Tank Top Level. One Port &amp; Two Starboard

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

on Platform, after End of Motor Room

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 micaite 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 Reverse Current Circuit Breakers with Overload &amp; Time Limit on two Poles for each generator. Double Pole Overload Circuit Breaker with Time Limits &amp; D.P. Quick Break Knife Switch or D.P. Quick Break Knife Switch &amp; D.P. Hand Guard Fuses for each Outgoing Circuit arranged for paralleling purposes.

Instruments on main switchboard

15

ammeters

2

volts

arranged

Indicating Lamps

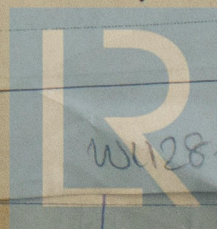
Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system

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 9.0 Volts Service Box Aft.  
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 Yes

Support and Protection of Cables, state how the cables are supported and protected Secured by clips to Perforated Plating with Sheet Metal bower in barge spaces in steel cable trough on Deck & in Wood casing in Accommodation

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

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 Properly constructed & Insulated Joint Boxes.

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 All Metal Portable Fittings not Fitted to Ships Steelwork are earthed with connections equivalent to Working Conductor, 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 None Fitted

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

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected

Guarded Stirrup Pendants. Hard Rubber cable in galvanised Iron conduit. how are the cables led

where are the controlling switches situated Locally.

Searchlight Lamps, ~~connections only~~ whether fixed or portable Portable, are their fittings as per Rule Yes

Arc Lamps, other than searchlight lamps, No. of one, 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 ALL are their axes 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 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



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# 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	330	220	1500	300	Diesel Engines.		
AUXILIARY ...	-							
EMERGENCY ...	-							
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 ...	3	1.8	91	.093	1500	1683	170	Varnished Cambric	Lead & Braiding
EQUALISER CONNECTIONS ...	2	1.0	61	.103	-	972	85	do.	do.
AUXILIARY GENERATOR...									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER MOTOR GENERATOR...									
MOTOR ROOM LIGHTING...	1	0.01	7	.044	24	38	40	do.	do.
MOTOR ROOM LIGHTING...	1	0.01	7	.044	19	38	150	do.	do.
MOTOR RM. LIGHTING...	1	0.01	7	.044	16	38	150	do.	do.
AUXILIARY SWITCHBOARDS ...									
MASTERBOARD REFRIG.	2	1.5	91	.103	1280	1328	260	do.	do.
MOTOR ROOM.	1	0.0225	7	.064	63	68	70	do.	do.
MOTOR ROOM REFRIG FANS } LOOPED.	1	0.0225	7	.064	40	68	114	do.	do.
DO DO }	1	0.2	37	.083	230	266	419	do.	do.
DO DO }	1	0.1	19	.083	165	172	140	do.	do.
DO DO }	1	0.15	37	.072	174	222	315	do.	do.
ACCOMMODATION ...									
MASTERBOARD LIGHTING	1	0.0225	7	.064	37	68	450	do.	do.
DO COOKING	1	0.04	19	.052	65	94	340	do.	do.
MASTERBOARD LIGHTING	1	0.03	19	.044	50	78	380	do.	do.
DO COOKING	1	0.04	61	.093	310	417	380	do.	do.
WIRELESS ...	1	0.007	7	.036	-	25	600	do.	do.
SEARCHLIGHT ...	1	0.2	37	.083	-	266	Looped with Windlass 224.	do.	do.
MASTHEAD LIGHT ...	1	0.003	3	.036	0.18	12	500	Rubber	Hard Rubber Braiding
SIDE LIGHTS ...	1	0.003	3	.036	0.18	12	100	do.	do.
COMPASS LIGHTS ...	1	0.002	3	.029	0.09	7.8	25	do.	do.
STERN LIGHTS ...	1	0.003	3	.036	0.18	12	900	do.	do.
CARGO LIGHTS FOR? AFT.	1	0.0225	7	.064	20.0	68	825	Varnished Cambric	Lead & Braiding
HEATERS MASTERBOARD	1	0.075	19	.072	135.0	141.0	648	do.	do.
HEATERS MASTERBOARD	1	0.06	19	.064	118.0	122.0	450	do.	do.
GYRO COMPASS.	1	0.0145	7	.052	20.0	51.0	390	do.	do.

## MOTOR CONDUCTORS.

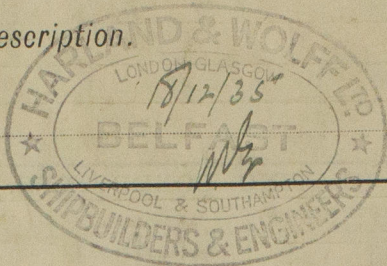
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Effective Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP ...	1	1	0.04	19	.052	92	94	240	Varnished Cambric	Lead & Braiding
MAIN BILGE LINE PUMPS	1	1	0.0145	7	.052	48	51	220	do.	do.
GENERAL SERVICE PUMP	1	1	0.04	19	.052	93	94	242	do.	do.
EMERGENCY BILGE PUMP										
SANITARY PUMP ...	1	1	0.04	19	.052	93	94	256	do.	do.
CIRC. SEA WATER PUMPS	3	1	0.075	19	.072	120	141	340	do.	do.
AUX. CIRC. FRESH WATER PUMPS...	2	1	0.06	19	.064	102	38	234	do.	do.
AUX. AIR COMPRESSOR ...	2	1	0.007	37	.036	22	25	195	do.	do.
FRESH WATER PUMP ...	1	1	0.007	7	.036	23	25	300	do.	do.
ENGINE TURNING GEAR...	2	1	0.0225	7	.064	58	68	90	do.	do.
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS	3	1	0.25	37	.093	267	309	120	do.	do.
OIL FUEL TRANSFER PUMP...	2	1	0.0225	7	.064	57	68	175	do.	do.
WINDLASS ...	1	1	0.2	37	.083	300	266	345	do.	do.
WINCHES, FORWARD MASTER "C."	7	1	0.5	61	.103	384	486	480	do.	do.
WINCHES, AMIDSHIP MASTER "B"	4	1	0.2	37	.083	200	266	380	do.	do.
WINCHES, AFT MASTER "D."	4	1	0.2	37	.083	200	266	285	do.	do.
" " " " "E"	8	1	0.4	61	.093	417	417	390	do.	do.
STEERING GEAR—										
(a) MOTOR GENERATOR...	2	1	0.2	37	.083	270	184	50	Rubber	Hard Rubber Braiding
(b) MAIN MOTOR ...	2	1	0.1	19	.083	216	172	450	Varnished Cambric	Lead & Braiding
WORKSHOP MOTOR										
VENTILATING FANS										
MOTOR ROOM FANS	5	1	0.003	3	.036	7.4	12	300	Rubber	do.
REFRIG. ROOM FANS	2	1	0.002	3	.029	2.2	7.8	96	do.	Hard Rubber Braiding
11 H.P. COOLING FANS	4	1	0.0225	7	.064	45	68	140	do.	do.
8 H.P. do.	2	1	0.0145	7	.052	32	51	100	do.	do.
5.5 H.P. do.	2	1	0.007	7	.036	24.8	25	90	do.	do.
4.5 H.P. do.	2	1	0.007	7	.036	20.0	25	90	do.	do.



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.



Electrical Engineers.

Date 18/12/35

#### COMPASSES.

Distance between electric generators or motors and standard compass 145 ft 41 ft. From the nearest motor.  
Distance between electric generators or motors and steering compass 140 ft 35 ft. From the nearest motor.

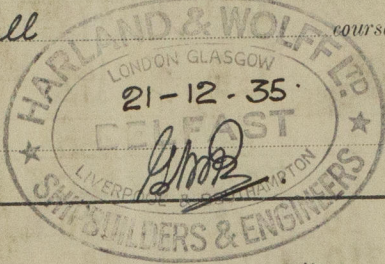
The nearest cables to the compasses are as follows:—

A cable carrying 0.09 Ampères 12 feet from standard compass ON feet from steering compass.  
A cable carrying 0.18 Ampères 6 feet from standard compass 8 feet from steering compass.  
A cable carrying 4.8 Ampères 6 feet from standard compass 6 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.



Builder's Signature.

Date 18/6/35.

Is this installation a duplicate of a previous case Yes If so, state name of vessel "Australia Plat"

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

The electrical installation is in accordance with the approved plans and the Rules. The generators were built under survey. Insulation tests have been made with satisfactory results. In our opinion the vessel is now eligible for the Notation "Electric Light".

Total Capacity of Generators 990 Kilowatts.

The amount of Fee ... 69: 15: 3-1-1936  
Credit London 7-0  
Travelling Expenses (if any) £ 13: 18: 0 23-1-1936  
When applied for, 1/11  
When received, 24/1

R. C. Clayton & Charles W. Hunter.  
Surveyors to Lloyd's Register of Shipping.

Im. 9. 30.—Transfer.

Committee's Minute

FRI. 10 JAN 1936

Assigned

See Rel. Rpt 11655



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W1128-0278 213

MOTOR CONDUCTORS (CONTINUED)

DESCRIPTION	NO. OF MOTORS	CONDUCTORS		COMPOSITION OF STRAND		TOTAL MAXIMUM CURRENT AMPS.		APPROXIMATE LENGTH LEAD & RETURN FEET	INSULATED WITH	HOW PROTECTED
		NO. PER POLE	TOTAL EFFECT AREA PER POLE SQ. INS.	NO.	DIA.	IN CIRCUIT	RULE			
3 H.P. Cooling Fan	2	1	0.0045	7	.029	12.5	18	150	Rubber	Hard Rubber Braiding
1.5 H.P. do.	1	1	0.003	3	.036	6.9	12	228	do	Hard Rubber Braiding
1 H.P. do.	7	1	0.002	3	.029	4.25	7.8	220	do	do.
0.45 H.P. do.	1	1	0.002	3	.029	3.4	7.8	80	do	do.
0.45 H.P. do	4	1	0.002	3	.029	2.1	7.8	100	do	do
175 H.P. b.C. fan blower	10	1	0.003	3	.036	8	12	150	do	do
Refrig. Oil Purifier 18 H.P.	2	1	0.03	19	.044	7.62	78	210	varnished cambric	Lead & Braiding
" Brine Pumps 18 H.P.	5	1	0.03	19	.044	70	78	170	do	do
" " " 325 H.P.	1	1	0.0045	7	.029	13.3	16.4	150	do	do
" " " 3 H.P.	1	1	0.0045	7	.029	12.2	16.4	100	do	do
" " " "	2	1	0.0045	7	.029	12.2	18.2	150	Rubber	Hard Rubber Braiding
" F.W. Pump 3 H.P.	1	1	0.0045	7	.029	12.2	16.4	160	varnished cambric	Lead & Braiding
Hallmark m/c. Panel	-	1	0.0225	7	.064	55	68	180	do	do
Hallmark m/c. Motor	2	1	0.01	7	.044	27.5	38	40	do	do.
Refrig. Oil Purifier	1	1	0.002	3	.029	31	7.8	60	Rubber	Hard Rubber Braiding
b.C. Indicator Panel	2	1	0.002	3	.029	0.5	7.8	120	do	do
Lathe	1	1	0.003	3	.036	13	12	80	do	Lead & Braiding
Grinding m/c.	1	1	0.003	3	.036	9.85	12	110	do	do.
Drilling m/c.	1	1	0.003	3	.036	8.7	12	114	do	do.
Lub. Oil Purifier	2	1	0.003	3	.036	6.6	12	40	do	do.
Fuel Oil Purifier	2	1	0.0045	7	.029	14.0	16.4	40	varnished cambric	do.
Purified Oil Pump	1	1	0.0045	7	.029	11.2	16.4	80	do.	do.
b.C. Lifting Gear	2	1	0.007	7	.036	21.0	25	270	do.	do.
Waste Heat Boiler Blower	1	1	0.0045	7	.029	11.0	16.4	300	do.	do.



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