

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 14 SEP 1932

Date of writing Report 12. 8. 32. 19 When handed in at Local Office 10. 9. 1932 Port of **GLASGOW**  
 No. in Survey held at **GLASGOW.** Date, First Survey 15<sup>th</sup> June Last Survey 5<sup>th</sup> September 1932.  
 Reg. Book. 76767. on the s.s. "BHADRAVATI" (Number of Visits.....)  
 Tons { Gross 1307  
 Net 553  
 Built at **GLASGOW.** By whom built **HARLAND & WOLFF LTD.** Yard No. 9259 When built 1932  
 Owners **BOMBAY STEAM NAVIGATION CO. LTD** Port belonging to **BOMBAY.**  
 Electric Light Installation fitted by **HARLAND & WOLFF LTD.** Contract No. 9259 When fitted 1932.  
 Is the Vessel fitted for carrying Petroleum in bulk **No.**

System of Distribution **TWO WIRE**

Pressure of supply for Lighting **110** volts, Heating **-** volts, Power **110** volts.

Direct or Alternating Current, Lighting **DIRECT** Power **-**

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 **No**, 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 **STAR<sup>2</sup> AFTER CORNER OF ENGINE ROOM**,

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 **STAR<sup>2</sup> AFTER CORNER OF ENGINE 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 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

GENERATORS:- **D.P. SWITCH & 2 S.P. FUSES**

CIRCUITS:- **8 S.P. SWITCHES & D.P. FUSES & 2 S.P. C.O. SWITCHES & D.P. FUSES**

Instruments on main switchboard **2** ammeters **1** voltmeter **-** 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 **TWO LAMPS IN**

**SERIES ACROSS BUS BARS, MID POINT EARTHED C.O. SWITCH FOR DIFF. BUS BARS**

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**

**SINGLE & TWIN.** 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** **4.5 Volts.**

**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** **E & B. ROOMS. 1/2 H.R. CABLE (SINGLE) BRASS CLIP  
L.C. V.I.R. ELSEWHERE WITH BRASS CLIPS - ALL EXPOSED**

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** **ONLY ON 3/0.029 CABLES IN SPECIAL 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** **CLIPS ON LEAD COVERING AND ARMOUR AT FITTINGS AND BOXES. FOR BONDING & EARTHING PURPOSES.**, 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 **No.**, are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected **No**, 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 **—**

**Are 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 axes of rotation fore and aft **—**, 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** **—**

**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 **—**

DESCRIPTION OF GENERATOR.	No. of	RATED AT			DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amperes.		Revs. per Min.	Fuel Used.
MAIN	1	12	110	109	500	S.C. STEAM ENGINE	
AUXILIARY	1	1	110	9	1000	D	
EMERGENCY							
ROTARY TRANSFORMER							

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	1	.10090	19	.083	109	118	12	V.I.R.	L.C. IN G.I. CONDUIT
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR	1	.00455	7	.029	9	18.2	24	V.I.R.	D
EMERGENCY GENERATOR									
ROTARY TRANSFORMER MOTOR GENERATOR									
ENGINE ROOM	1	.00701	7	.036	15	24	12	V.I.R.	L.S.A.B.
BOILER ROOM	1	.00244	3	.029	3	7.8	100	V.I.R.	L.S.A.B. 2core
AUXILIARY SWITCHBOARDS									
NAVIGATION	1	.00455	7	.029	9	18.2	254	V.I.R.	L.S.A.B.
FORECASTLE	1	.00244	3	.036	3	12	356	"	"
FORE TWEEN DECK	1	.00244	3	.036	5	12	282	"	"
AFT. TWEEN DECK	1	.00244	3	.029	4	7.8	180	"	L.C.
POOP	1	.00244	3	.036	6	12	216	"	L.S.A.B.
ACCOMMODATION SALOON	1	.00701	7	.036	16	24	210	"	L.C.
MAIN DECK	1	.00244	3	.036	7	12	90	"	"
WIRELESS									
SEARCHLIGHT									
MASTHEAD LIGHT	1	.00244	3	.029	4	7.8	240	V.I.R.	L.S.A.B.
SIDE LIGHTS	1	.00244	3	.029	4	7.8	68	"	L.C.
COMPASS LIGHTS	1	.00244	3	.029	4	7.8	36	"	"
POOP LIGHTS									
CARGO LIGHTS	1	.00701	7	.036	23	24	90	V.I.R.	L.C.
ARC LAMPS									
HEATERS									

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										
MAIN BILGE LINE PUMPS										
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP										
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—										
(a) MOTOR GENERATOR										
(b) MAIN MOTOR										
WORKSHOP MOTOR										
VENTILATING FANS										

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.

HARLAND AND WOLFF, LIMITED.

Electrical Engineers.

Date 7/9/32.

COMPASSES.

Distance between electric generators or motors and standard compass APPROX. 70 FT

Distance between electric generators or motors and steering compass " 70 FT

The nearest cables to the compasses are as follows:—

A cable carrying .2 Ampères 2 feet from standard compass 2 feet from steering compass.

A cable carrying 2.0 Ampères 5 feet from standard compass 5 feet from steering compass.

A cable carrying 9.0 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 THE course in the case of the standard compass, and NIL degrees on ALL THE course in the case of the steering compass.

for HARLAND AND WOLFF, LIMITED

*R. J. Allen*

Govan Secretary.

Builder's Signature.

Date 7th September 1932

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 fitted on board under special survey, tested under full working conditions and found satisfactory. The materials and workmanship were found to be good and sound.*

*Elec Light*

*WHL 15/9/32*

*WHL 10/9/32*

Total Capacity of Generators 13 Kilowatts.

The amount of Fee ... £ 13 : 0 : 0 *8/9/32*

Travelling Expenses (if any) £ — : — : — *24/9/32*

*WHL*  
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 13 SEP 1932

Assigned *Elec. Light.*

1m.0.30.—Transfer.  
 (The Sureties are requested not to write on or below the space for Committee's Minutes.)



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