

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)  
Received at London Office.....

Date of writing Report 26.8.1929 When handed in at Local Office 7.9.1929 Port of GLASGOW.  
No. in Survey held at GREENOCK. Date, First Survey 6.6.29 Last Survey 26.8.1929  
Reg. Book. S.S. BAHADUR. (Number of Visits.....10)  
14981. on the S.S. BAHADUR. Tons {Gross 5024  
Net —  
Built at PORT GLASGOW By whom built MESSRS LITHGOW & LTD Yard No. 823 When built 1929  
Owners MESSRS ASIATIC STEAM CO LTD Port belonging to LONDON.  
Electric Light Installation fitted by THE SUNDERLAND FORGE & ENG CO Contract No. 823 When fitted 1929.

System of Distribution DOUBLE WIRE.  
Pressure of supply for Lighting 110 volts, Heating — volts, Power 110 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 1 GENERATOR is an adjustable regulating resistance fitted in series with each shunt field —  
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 THRUST RECESS. 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. are the prime movers and  
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 THRUST RECESS. 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 DOUBLE POLE SWITCH AND FUSES FOR GENERATOR. DOUBLE POLE SWITCH & FUSES FOR EACH OUTGOING CIRCUIT.  
Instruments on main switchboard 1 ammeters 1 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 AND 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 & TRIN 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 50

**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 conductors protected from moisture by being suitably sealed with insulating compound YES.

**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 LEAD COVERED ARMOURD & BRAIDED CABLES IN ENGINE ROOM SUPPORTED BY GAL IRON CLIPS, LEAD COVERED & BRAIDED CABLES IN ACCOMM SUPPORTED BY BRASS CLIPS.

If cables are run in rood 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 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 FIBRE.

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas YES.

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 YES.

**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** 2, whether fixed or portable YES, are their fittings as per Rule YES.

**Arc Lamps,** other than searchlight lamps, No. of 2, are their live parts insulated from the frame or case YES, are their fittings as per Rule YES.

**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 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 YES.

if not of this type, state distance of the combustible material horizontally or vertically above the motors YES and YES.

**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 YES.

**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	1	12	110	109	250	STEAM ENGINE		
AUXILIARY	—							
EMERGENCY	—							
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	2	10	19	0.083	109	45	V.I.R.	LEAD COVERED ARMOURD & BRAIDED.
	EQUALISER CONNECTIONS	—							
	AUXILIARY GENERATOR	—							
	EMERGENCY GENERATOR	—							
	ROTARY TRANSFORMER	—							
	AUXILIARY SWITCHBOARDS	—							
	ENGINE ROOM	2	0.022	3	0.029	6	40	V.I.R.	LEAD COVERED ARMOURD & BRAIDED.
	BOILER ROOM	2	0.007	4	0.036	11.8	90	V.I.R.	LEAD COVERED ARMOURD & BRAIDED.
	ACCOMMODATION	2	0.007	4	0.036	11.8	265	V.I.R.	LEAD COVERED ARMOURD & BRAIDED.
	NAVIGATION	2	0.025	4	0.064	32.4	70	V.I.R.	LEAD COVERED ARMOURD & BRAIDED.
	CARGO	2	0.025	4	0.064	32.4	70	V.I.R.	LEAD COVERED ARMOURD & BRAIDED.
	WIRELESS	2	0.007	4	0.036	12.5	300	V.I.R.	LEAD COVERED ARMOURD & BRAIDED.
	SEARCHLIGHT	2	0.022	3	0.029	5.5	560	V.I.R.	LEAD COVERED ARMOURD & BRAIDED.
	MASTHEAD LIGHT	2	0.022	3	0.029	5.5	96	V.I.R.	LEAD COVERED ARMOURD & BRAIDED.
	SIDE LIGHTS	2	0.022	3	0.029	18	40	V.I.R.	LEAD COVERED & BRAIDED.
	COMPASS LIGHTS	2	0.022	3	0.029	18	40	V.I.R.	LEAD COVERED & BRAIDED.
	POOP LIGHTS	—							
	CARGO LIGHTS	—							
	ARC LAMPS	—							
	HEATERS	—							

## 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	—							
	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	—							



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To (A)

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.

p.p. *The Sunderland Forge Eng. Wld.*  
*R. H. Faugh*

Electrical Engineers.

Date *31/8/29*

#### COMPASSES.

Distance between electric generators ~~on motors~~ and standard compass *160 FEET.*

Distance between electric generators ~~on motors~~ and steering compass *152 FEET.*

The nearest cables to the compasses are as follows:—

A cable carrying *6.8* Ampères *12* feet from standard compass *8* feet from steering compass.

A cable carrying *1/8* Ampères *2* feet from standard compass *2* feet from steering compass.

A cable carrying Ampères feet from standard compass 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 *any* course in the case of the standard compass, and *nil* degrees on *any* course in the case of the steering compass.

LITHGOWS LIMITED.

*John McFadden* Secretary

Builder's Signature.

Date *4/9/29.*

Is this installation a duplicate of a previous case *yes.* If so, state name of vessel *S.S. Subadar.*

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

*This installation has been fitted on board under special survey. Tested in our full working conditions and found satisfactory.*

*The materials and workmanship were found to be good and sound.*

*It is submitted that this vessel is eligible for the Award.*

*Lee Light*

*J. S. Rankin*  
*18/9/29*

Total Capacity of Generators *12.* Kilowatts.

The amount of Fee ... £ *12.0.0.* : When applied for, *Pa. 5/9/29*

Travelling Expenses (if any) £ : : When received, *5.9.29*

*J. S. Rankin*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute *GLASGOW*

*10 SEP 1929*

Assigned

*Elec. Light*

Im. 23. Transfer. (The Surveyors are requested not to write on or below the space for Committee's Minute.)



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