

REPORT ON ELECTRICAL EQUIPMENT.

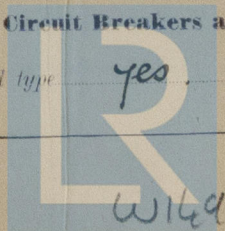
(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

APR 13 1939

Date of writing Report 25-3-39 When handed in at Local Office 11:4:39 Port of Glasgow
 No. in Survey held at Glasgow Date, First Survey 3:2:39 Last Survey 24-3-1939
 Reg. Book. 87306 on the M.V. "BHIMA" (Number of Visits 6)
 Tons { Gross 5280
 Net 3097
 Built at Glasgow By whom built C. Connell & Co. Ltd. Yard No. 425 When built 1939
 Owners James House Ltd. Port belonging to London
 Electric Light Installation fitted by H. T. Robertson & Co. Contract No. 425 When fitted 1939
 Is the Vessel fitted for carrying Petroleum in bulk no

System of Distribution

Pressure of supply for Lighting 110 volts, Heating — volts, Power 110 volts.Direct or Alternating Current, Lighting direct Power directIf 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 yesGenerators, do they comply with the requirements regarding temperature rise 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 yesHave certificates of test results for machines under 100 kw. been submitted and approved yes Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing —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 yesPosition of Generators in 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 yesEarthing, 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 near generatorsIf 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 yesis all insulation of high dielectric strength and of permanently high insulation resistance yesis it of an approved type 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 swidamyo, is the non-hygroscopic insulating material of an approved type yesand is the frame effectively earthed yes Are the fittings as per Rule regarding:— spacing or shielding of live parts yesaccessibility of all parts yes, absence of fuses on back of board yes, temperature rise of omnibus bars yesindividual fuses to voltmeter, pilot or earth lamp yes, are moving parts of switches alive in the "off" position noare all screws and nuts securing connections effectively locked yes are any fuses fitted on the live side of switches no Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches each generator controlled by D.P. switch and fuses, each outgoing circuit controlled by D.P. Co switch and fusesAre turbine driven generators fitted with emergency trip switch as per rule — Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material — Instruments on main switchboard 2 ammeters 1voltmeters — synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection —Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system earth lamps Switches, Circuit Breakers and Fusible Cut-outs, yesdo these comply with the requirements of the Rules yes are the fusible cutouts of an approved type yes have the reversed —

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W149-0158 Foundation

current protection devices been tested under working conditions
construction, protection, insulation, material, and position of these as per rule yes.

Cables: Single, twin, concentric, or multicore Single twin are the cables insulated and protected as per Tables IV, V, X or XI of the Rules yes

If the cables are insulated otherwise than as per Rule, are they of an approved type 4 1/2 Volts
any point of the installation under maximum load

area of 0.04 square inch and above provided with soldering sockets yes
Paper Insulated and Varnished Cambric Insulated Cables.

If conductors are paper or varnished cambric insulated, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound —, or waterproof insulating tape —
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
Are cables in machinery spaces, galleys, lavatories, bathrooms and lavatories lead covered or run in conduit yes

Support and Protection of Cables, state how the cables are supported and protected mainly V.I.R. in conduit wiring in engine room L.C.B. clipped. wiring in accommodation L.C. clipped.

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, are the cables and fittings in accordance with the special requirements —

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 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 bad sheathing efficiently casted by means of clips or binding glands.
are their connections made as per Rule —

Alternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule yes
position and method of control of the emergency supply and how the generator is driven —
Emergency Supply, state

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 —
are all fittings suitably ventilated yes, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials yes

Heating and Cooking Appliances, are they constructed and fitted as per Rule —, are air heaters constructed and fitted as per Rule —

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 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 —

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing —
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 — are all fuses of the fitted cartridge type — are they of an approved type —

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office —

Spare Gear, if the vessel is for open sea service have spares been supplied as per Rule 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 ...	2	15	110	136	500	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 Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR ...	1	15	37	072	136	152	20	V.I.R.	L.C.
EQUALISER CONNECTIONS ...									
AUXILIARY GENERATOR ...									
EMERGENCY GENERATOR ...									
ROTARY TRANSFORMER MOTOR GENERATOR ...									
ENGINE ROOM ... D.B.	1	007	7	036	12	24	6	"	L.C.B.
BOILER ROOM ...									
AUXILIARY SWITCHBOARDS ...									
ACCOMMODATION ...									
ENGINEERS' D.B.	1	007	7	036	18	24	60	"	Conduit.
SALOON, BRIDGE D.B.	1	01	7	044	20	31	250	"	"
POOP D.B.	1	007	7	036	9	24	300	"	"
WIRELESS ...	1	007	7	036	9	24	250	"	"
SEARCHLIGHT ...									
MASTHEAD LIGHT ...	1	002	3	029	36	7.8	350	"	L.C.
SIDE LIGHTS ...	1	002	3	029	36	7.8	60	"	"
COMPASS LIGHTS ...	1	002	3	029	2	7.8	15	"	"
POOP LIGHTS ...									
CARGO LIGHTS ...									
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 Nominal 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 ...	1	1	01	7	044	26	31	40	V.I.R.	L.C.B.
WORKSHOP MOTOR ...	1	1	01	7	044	26	31	40	V.I.R.	L.C.B.
VENTILATING FANS ...	2	1	0225	7	064	34	46	45	"	"
OIL PURIFIERS. D.B.	1	1	007	7	036	13	24	60	"	"
CRANE ...	1	1	01	7	044	24	31	50	"	"
REFRIGERATOR ...	1	1	01	7	044	24	31	50	"	"

All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electro-technical Commission Publication No. 28).

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

H J Robertson & Co

Electrical Engineers.

Date *28th March '39*

COMPASSES.

Distance between electric generators or motors and standard compass

90 feet

Distance between electric generators or motors and steering compass

88 feet

The nearest cables to the compasses are as follows:—

A cable carrying *36* Ampères *behind* feet from standard compass *behind* feet from steering compass.

A cable carrying *5* Ampères *8* feet from standard compass *8* 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

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.

For CHARLES CONNELL & CO., Limited

D McCallum

SECRETARY

Builder's Signature.

Date *30 March 1939*

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.)

The electrical equipment of this vessel has been fitted on board under special survey, tested under full working conditions and found satisfactory. The materials and workmanship are good.

EB

11/4/39

*Wid
L.Y.*

15/4/39

Total Capacity of Generators *30* Kilowatts.

The amount of Fee ... £ *22 : 10* : *5. 4* 19 *39*.

Travelling Expenses (if any) £ : : *12. 4. 39* 19 *39*.

R. I. Hutchinson

Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 12 APR 1939**

Assigned **SEE ACCOMPANYING MACHINERY REPORT.**



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