

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

JAN 6 1938

Date of writing Report 29. 12. 1937 When handed in at Local Office 5. 1. 1938 Port of Glasgow
 No. in Survey held at Glasgow Date, First Survey 8-10-37 Last Survey 23-12-1937
 Reg. Book. 21796 on the MV. "British Security" (Number of Visits 7)
 Built at Glasgow By whom built Harland & Wolff Ltd. Yard No. 974G. When built 1934
 Owners British Tanker Co. Port belonging to London
 Electric Light Installation fitted by Harland & Wolff Ltd. Contract No. 974G When fitted 1934
 Is the Vessel fitted for carrying Petroleum in bulk Yes.

System of Distribution Two 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 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 yes, is an adjustable regulating resistance fitted in series with each shunt field yes Have 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 yes
 Position 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 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 near to generators.
 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
 is 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 SINDANYO, is the non-hygroscopic insulating material of an approved type 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, temperature rise of omnibus bars yes, individual fuses to voltmeter, pilot or earth lamp yes, are moving parts of switches alive in the "off" position no are 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
 D.P. Circuit breaker with interlocked equaliser switch and fitted with O/L & R/C trips — for each 30 K.W. generator. D. Psinich and fuses for 8 K.W. generator and each outgoing circuit.
 Are 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 12 ammeters 3
 voltmeters — 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 yes earth lamps.
 Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules yes are the fusible cutouts of an approved type yes have the reversed

current protection devices been tested under working conditions yes

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 yes

any point of the installation under maximum load 4.5 volts

Fall of Pressure, state maximum between bus bars and yes

Cable Sockets, are the ends of all cables having a sectional 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 yes, or waterproof insulating tape 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 Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit yes

Support and Protection of Cables, state how the cables are supported and protected trans: L.C.A.B. in galv. tubing run on fireproof gangways. Circuit wiring: machinery spaces L.C.A.B. Accom. L.C.B. clipped.

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 yes

Refrigerated Chambers, are the cables and fittings in accordance with the special requirements none

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 Lead covering and armoured earthen by means of bonding glands & clips.

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 Fittings at top of pump rooms in special gastight fittings. in gastight tubing outside pump rooms.

where are the controlling switches situated in accommodation amidships.

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 yes, are air heaters constructed and fitted as per Rule yes

Searchlight Lamps, No. of being only, whether fixed or portable yes, are their fittings as per Rule yes

Arc Lamps, other than searchlight lamps, No. of yes, 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

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing 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

are all fuses of the filled cartridge type yes are they of an approved type yes

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

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	30	110	273	550	Oil engine / Steam engine	Diesel oil.	Above 150° F		
AUXILIARY	1	8	110	73	750	Steam engine.				
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 Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.				
MAIN GENERATOR	1	.40	61	.093	273	288	68	Rubber	L.C. A. B.	
EQUALISER CONNECTIONS	1	.15	37	.072	-	152	34	"	"	
AUXILIARY GENERATOR	1	.06	19	.064	73	83	44	"	"	
EMERGENCY GENERATOR										
ROTARY TRANSFORMER										
ENGINE ROOM. } D.B. 1st	1	.0225	7	.064	40	46	80	"	"	
BOILER ROOM. } 61 GA.										
AUXILIARY SWITCHBOARDS										
FOR'D & MIDSHIP	1	.06	19	.064	61	83	600	"	L.C.A.B. in tubing.	
NAVIGATION D.B.	1	.0225	7	.064	19	46	720	"	"	
AFT LIGHTING.	1	.0145	7	.052	30	37	290	"	"	
ACCOMMODATION										
WIRELESS	1	.0145	7	.052	20	37	730	"	"	
SEARCHLIGHT WIRING ONLY	1	.04	19	.052	60	64	1300	"	"	
MASTHEAD LIGHT	1	.002	3	.029	.36	7.8	440	"	"	
SIDE LIGHTS	1	.012	3	.029	.36	7.8	50	"	L.C. B.	
COMPASS LIGHTS	1	.002	3	.029	.20	7.8	30	"	"	
POOP LIGHTS										
CARGO LIGHTS										
ARC LAMPS										
HEATERS										

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 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.	1	1	.06	19	.064	79	83	150	Rubber	L.C. A. B.
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	1	1	.01	7	.044	25.5	31	130	"	"
VENTILATING FANS										
FORCED DRAUGHT FAN	1	1	.0225	7	.064	39	46	150	"	"
OIL PURIFIERS. D.B.	1	1	.06	19	.064	51.4	83	80	"	"
REFRIG. MACHINE.	1	1	.04	19	.052	64	64	150	"	"
THERMOTANK FANS. S.B.	1	1	.06	19	.064	79	83	600	"	"

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.

For HARLAND AND WOLFF, LIMITED

R. J. Green
Govan Secretary.

Electrical Engineers.

Date 30/12/37

COMPASSES.

Distance between electric generators or motors and standard compass

40 feet.

Distance between electric generators or motors and steering compass

30 feet.

The nearest cables to the compasses are as follows:—

A cable carrying 18 Ampères led into feet from standard compass led into feet from steering compass.

A cable carrying 15 Ampères 15 feet from standard compass 10 feet from steering compass.

A cable carrying 20 Ampères 27 feet from standard compass 22 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. Green
Govan Secretary.

Builder's Signature.

Date 30/12/37

Is this installation a duplicate of a previous case

yes

If so, state name of vessel

M.V. BROOMDALE

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.

Noted

7/1/38

Total Capacity of Generators 68 Kilowatts.

The amount of Fee £ 29 : 6 : 5

When applied for, 5 JAN 1938

Travelling Expenses (if any) £ - : - : 14/1 1938

When received.

Committee's Minute TUE 11 JAN 1938

Assigned See other & E. report

R. I. Hutchinson
Surveyor to Lloyd's Register of Shipping.