

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

SEP 20 1940

Date of writing Report 9/9/1940 When handed in at Local Office 18/9/1940 Port of MANCHESTER  
 No. in Survey held at MANCHESTER Date, First Survey 17/8/40 Last Survey 30/8/1940  
 Reg. Book, 86164 on the SS EMPIRE BISON ex WEST CAWTHON Tons { Gross 5611  
 Net 3483  
 Built at SAN PEDRO, CAL. By whom built S. WESTERN S.B. Co. Yard No. ✓ When built 1919  
 Owners MINISTRY OF SHIPPING (SIR R. ROYNER & CO. LTD. Mgrs) Port belonging to BRITISH  
 Electric Light Installation fitted by ✓ Contract No. ✓ When fitted 1919  
 Is the Vessel fitted for carrying Petroleum in bulk No.

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 temperature rise ✓, 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. (See final remarks) 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 ✓ Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing ✓  
 Have certificates for generators under 100 kw. been supplied and approved ✓  
 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 Engine Room Flat. Starboard side, 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 Engine Room Flat. Starboard side  
 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 ✓  
 is it of an approved type ✓, 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., 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 Enclosed type fuses on back  
 accessibility of all parts Yes., absence of fuses on back of board for voltmeter earth lamp 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 No but found tight 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 T.P. Knife Switch. D.P. fuses for each dynamo. D.P. Knife Switch. D.P. fuses for each outgoing circuit (See final remarks)  
 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 Yes. Instruments on main switchboard 2. ammeters 1  
 voltmeters ✓ synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection Yes.  
 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, ✓ have the reversed American type  
 do these comply with the requirements of the Rules Cartridge fuses. are the fusible cutouts of an approved type ✓





current protection devices been tested under working conditions *are fitted (See first remarks)* are all fuses labelled as per rule *Yes*.

**Joint Boxes, Section and Distribution Boards,** is the construction, protection, insulation, material, and position of these as per rule *Yes*.

**Cables:** Single, twin, concentric, or multicore *Single* are the cables insulated and protected as per Tables IV, V, X, XI, XII or XIII of the Rules *Yes*.

If the cables are insulated otherwise than as per Rule, are they of an approved type *✓* **Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load *5.3 volts* **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 *✓*, 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 laid under machines or floorplates *No* if so, are they adequately protected *✓*

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 *V.I.R. Cables in ready conduit throughout.*

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 *✓*

**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 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 *✓* state the material of which the bushes are made *✓*

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas *✓* 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 *✓* are they ventilated 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** *1* whether fixed or portable *Portable* 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 *✓* 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 *✓* have certificates for all motors for essential services been supplied and approved *✓*

**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 *✓* 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 flameproof type approved for use in dangerous spaces *✓*

**Spare Gear,** if the vessel is for open sea service have spares been supplied as per Rule *✓* are they suitably stored in dry situations *✓*

# PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE	
		Kilowatts.	Volts.	Amps.	Rev. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN ...	2	15	110	136	425	S.C. Steam Engine		
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 Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR ...	1	.075	19	.072	7.5	97	20	V.I.R.	Conduit.
EQUALISER CONNECTIONS ...									
AUXILIARY GENERATOR ...									
EMERGENCY GENERATOR ...									
ROTARY TRANSFORMER MOTOR GENERATOR...									
ENGINE ROOM... }	1	.007	7	.036	20	24	30	V.I.R.	Conduit
BOILER ROOM... }									
AUXILIARY SWITCHBOARDS ...									
Navigation Lights.	1	.0045	7	.029	3	18.2	296.	V.I.R.	Conduit
ACCOMMODATION ...									
Bridge Deck Quarter	1	.007	7	.036	13	24	248	V.I.R.	Conduit
Crew Apt.	1	.007	7	.036	8	24	368	do	do
Salon (Engine)	1	.007	7	.036	11	24	104	do	do
Chow Connection	1	.075	19	.072	—	97	128	do	do
De. Gaming.	1	.075	19	.072	95	97	16.	do	do
WIRELESS ...	1	.0225	7	.064	25	46	272	do	do
SEARCHLIGHT ...	1	.0225	7	.064	25	46	536.	do	do
MASTHEAD LIGHT ...	1	.002	3	.029	.4	7.8	592	do	do
SIDE LIGHTS ...	1	.002	3	.029	.4	7.8	94	do	do
COMPASS LIGHTS ...	1	.002	3	.029	.2	7.8	28	do	do
COCK LIGHTS ...	1	.002	3	.029	.4	7.8	680.	do	do
CARGO LIGHTS ...									
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...										
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, Lathe Drill	2	1		1	.104	23.5	112	V.I.R.	Conduit.	
VENTILATING FANS ...										



The Electrical Equipment is installed in accordance with the approved plans.

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

The foregoing is a correct description.

Electrical Engineers.

Date

#### COMPASSES.

Minimum distance between electric generators or motors and standard compass

108 ft. approx.

Minimum distance between electric generators or motors and steering compass

104 ft. approx.

The nearest cables to the compasses are as follows:—

A cable carrying 13 Amperes 8 feet from standard compass 8 feet from steering compass.

A cable carrying 3 Amperes 8 feet from standard compass 8 feet from steering compass.

A cable carrying 3.0 Amperes 8 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

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 degrees on course in the case of the standard

compass, and degrees on course in the case of the steering compass.

Builder's Signature.

Date

Is this installation a duplicate of a previous case No. If so, state name of vessel  
(as far as is known)

General Remarks (State quality of workmanship, opinions as to class, &c. This installation has been examined

& tested under full working load. Insulation resistance tests have been made of all dynamos, motors & cables. The distribution fuse boards & the cables, as far as practicable, have been examined & after fitting new navigation indicator board & minor repairs to wiring, have been found satisfactory. Efficient temporary repairs now made to main switchboard panels.

#### To Complete the Survey.

New main switchboard panels require to be fitted & at the same time the switching of the two dynamos required to be arranged so that they cannot be run in parallel. It is understood that this work will be done on the vessel's arrival in the U.S.A. (See copy of letter to London dated 3/9/40)

It is submitted that, on completion of above repairs, the Electrical Installation of this vessel will be eligible for Classification with the Society.

Total Capacity of Generators 30 Kilowatts.

The amount of Fee ... £ 8 :

Travelling Expenses (if any) £ :

When applied for,

from London

23.1.1941

When received.

19

R. C. Clayton & J. Knowles.

Surveyors to Lloyd's Register of Shipping.

Committee's Minute

Assigned

No action



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Foundation