

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

MAY 26 1938

Date of writing Report 10 When handed in at Local Office 25/5/38 Port of NEWCASTLE-ON-TYNE

No. in Survey held at Newcastle Date, First Survey 8 Feb 1938 Last Survey 21<sup>st</sup> May 1938  
 Reg. Book. Suff (Number of Visits 10)

40512 on the S.S. "Umgeni" Tons { Gross 8180  
 Net 5082

Built at Newcastle By whom built Swan Hunter & W.R. & Co. Ltd Yard No. 1556 When built 1938

Owners Bullard King & Co. Ltd Port belonging to London

Electric Light Installation fitted by Swan Hunter & Wigham Richardson Ltd Contract No. 1556 When fitted 1938

Is the Vessel fitted for carrying Petroleum in bulk No.

**System of Distribution** Double wire

**Pressure of supply for Lighting** 220 volts, **Heating** 220 volts, **Power** 220 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 No, 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 Yes (2 in No)

Have certificates for generators under 100 kw. been supplied and approved 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** Engine room 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 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 —

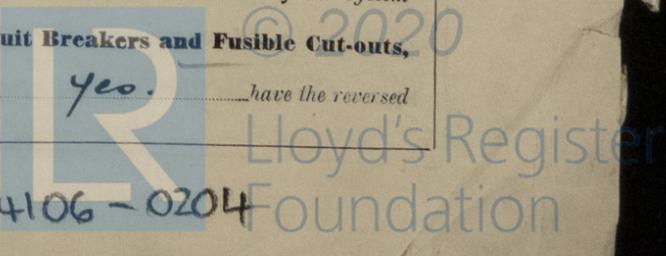
**Switchboards**, are they placed in accessible positions, free from inflammable gases and acid fumes Yes, are they protected from mechanical injury and damage from water, steam or oil Yes, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or 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 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 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 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. C.B for each generator. S.P 2 way switch with D.P. fuses on 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 2 ammeters 2 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 E lamps coupled to E through switches & fuses

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 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 Yes **Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load 48 for lighting, 6.5 for power. **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 laid under machines or floorplates No if so, are they adequately protected Yes

Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit Yes L.C. **Support and Protection of Cables,** state how the cables are supported and protected L.C. in machinery spaces. L.C. in acc. clipped up. L.C. & B in galvanised iron pipes along decks.

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 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 Lead.

**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 Boat dk emergency switchboard with C.O.S for main & emergency dynamo. Emergency gen driven by Diesel Engine

**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 are they ventilated 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 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 Yes how are the cables led Yes

where are the controlling switches situated Yes

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** 1 whether fixed or portable 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

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing Yes have certificates for all motors for essential services been supplied and approved 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 fitted 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 flameproof type approved for use in dangerous spaces Yes

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

PARTICULARS OF GENERATING PLANT.										
DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.		Insulated with	HOW PROTECTED.
		Kilowatts.	Volts.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.		
MAIN	2	175	220	796	450	Steam Engine				
AUXILIARY										
EMERGENCY	1	22	220	100		Diesel Engine				
ROTARY TRANSFORMER										

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.	Rate.			
MAIN GENERATOR	2	.8	61	.093	796	834	50	Y.C.	L.C.A+B
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR									
EMERGENCY GENERATOR	1	.2	19	.083	100	172	30	Y.C.	L.C.A.
ROTARY TRANSFORMER MOTOR GENERATOR									
ENGINE ROOM	1	.0045	7	.029	18.0	18.2	40	Y.I.R.	L.C.A.
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
Passengers Heating	1	.8	61	.093	356	417	80	Y.C.	L.C.A.
Officers & Engg	1	.06	19	.064	74	83	80	Y.I.R.	50
Accommodation Passengers	1	.06	19	.064	73	83	80	50	50
Officers, Engg & crew	1	.04	19	.052	56	64	80	50	50
Emergency lighting	1	.0045	7	.029	14	18.2	30	50	L.C.
Navigation chart dk	1	.007	7	.036	10	24	200	50	50
WIRELESS	.01	.01	7	.044	15	31	160	50	50
SEARCHLIGHT									
MASTHEAD LIGHT	1	.002	3	.029	.18	4.8	500	50	50
SIDE LIGHTS	1	.002	3	.029	.18	4.8	100	50	50
COMPASS LIGHTS	1	.002	3	.029	.07	4.8	50	50	50
Door LIGHTS	1	.002	3	.029	.18	4.8	220	50	50
CARGO LIGHTS	1	.01	7	.044	18.0	31.0	80	50	L.C.A.
HEATERS									

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.	Rate.			
BALLAST PUMP										
MAIN BILGE LINE PUMPS										
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP	1	1	.06	19	.064	75	83	260	Y.I.R.	L.C.A.
SANITARY PUMP										
CIRC. SEA WATER PUMPS										
HOT. CIRC. FRESH WATER PUMPS	1	1	.0045	7	.029	16.0	18.2	50	50	50
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	3	1	.002	3	.029	4	4.8	30	50	50
VENTILATING FANS	1	1	.0045	7	.029	14.5	18.2	100	50	50
Provision Refrig	2	1	.0045	7	.029	12.0	18.2	60	50	50
Brine pump	2	1	.01	19	.052	61.0	64.0	140	50	50
50	1	1	.0045	7	.029	13.3	18.2	50	50	50
Hold Cooler Fan	1	1	.0225	7	.064	40.0	46	440	50	L.C.A.
50	5	1	.0225	7	.064	34.0	46	440	50	50



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.

SWAN, HUNTER, & WIGHAM RICHARDSON LTD.  
*W. H. R.*

Electrical Engineers.

Date 23<sup>rd</sup> May 1938

**COMPASSES.**

Minimum distance between electric generators or motors and standard compass 130 feet.

Minimum distance between electric generators or motors and steering compass 125 feet.

The nearest cables to the compasses are as follows:—

A cable carrying .07 Ampères in feet from standard compass in feet from steering compass.

A cable carrying .18 Ampères 5 feet from standard compass 5 feet from steering compass.

A cable carrying .18 Ampères 5 feet from standard compass 5 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 course in the case of the standard compass, and nil degrees on all course in the case of the steering compass.

SWAN, HUNTER, & WIGHAM RICHARDSON LTD.

*W. H. R.*  
 DIRECTOR

Builder's Signature.

Date

Is this installation a duplicate of a previous case Yes. If so, state name of vessel S.S. "Umtali"

General Remarks (State quality of workmanship, opinions as to class, etc. The above inst<sup>n</sup> has been fitted out under special survey. The materials used & workmanship are good. The insulation resistance is good. The dynamo, governor, main board, cables, fuses & fittings were exc<sup>d</sup> tested under working conditions & found to be satisfactory. This vessel is eligible in my opinion for notation, D.F.

*W. T. B.*  
 26/5/38

Total Capacity of Generators 342 Kilowatts.

The amount of Fee ...	£ 54 : 2	When applied for,	25 MAY 1938
hwc. etc.	40. 17. 6		
h.w. etc.	10. 4. 6	When received,	
Travelling Expenses (if any)	£ 2 : 10 : 10		13. 6. 19. 38

*W. T. Badger.*  
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 3 JUN 1938

Assigned

*See hwc. J.E. 96297*

201.12.38—Transfer. The Surveyors are requested not to write on or below the space for Committee's Minute



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