

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

APR 12 1938

Received at London Office

Date of report *8-14-38* When handed in at Local Office *Port of Belfast*
 No. in Survey held at *Belfast* Date, First Survey *5th May 1937* Last Survey *1st April 1938*
 Reg. Book. *22182* or the *M. N. "Capetown Castle"* (Number of Visits *58*)
 Tons { Gross *26850*
 Net *16500*
 Built at *Belfast* By whom built *Harland & Wolff Ltd.* Yard No. *986* When built *1938*
 Owners *Union Castle Steamship Co. Ltd* Port belonging to
 Electric Light Installation fitted by *Harland & Wolff Ltd.* Contract No. *986* When fitted *1938*
 Is the Vessel fitted for carrying Petroleum in bulk *No.*

System of Distribution *Two Wire Direct Current*
 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 *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 *Yes*
 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 *Main generators in Aux & Motor Rm. Emerg. Gen. in Rm. D. Deck* 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
 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 *on Platform Forward in Auxiliary Motor Room*
 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 *in same compartment*

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
 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 micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework
 type *Yes*, and is the frame effectively earthed *Yes* Are the fittings as per Rule regarding:— spacing or shielding of live parts
 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. O/L. Reversing current circuit breaker with time limit, tripping device & interlocked equalizer switch for each generator. D.P. O/L. circuit breaker for 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 *Yes* Instruments on main switchboard *4* ammeters *2*
 voltmeters *Arranged 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 Indicating Lamps connected to Bus-bars by *D.P. Switches, Circuit Breakers and Fusible Cut-outs, 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 9.4 volts (Sprinkler pumps)

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 Cambrie Insulated Cables,** If conductors are paper or varnished cambrie 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 **Hard Rubber Waterproof Type Cables** Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit Clipped to perforated steel plating generally clipped to perforated steel plating except in U.S. Cabins in Wood Gas engine rooms, etc.

Support and Protection of Cables, state how the cables are supported and protected Yes are the cables 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 In properly constructed Insulated Joint Boxes.

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 Sheet Lead.

Earthing Connections, state what earthing connections are fitted and their respective sectional areas All Metallic Portable Fittings & Apparatus earthed through separate conductor.

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 Emerg. Switchboard fitted in special room and D.L. aft Distributing from Diesel Driven Emerg. Dynamo in same compartment

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 None

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected None

where are the controlling switches situated _____ how are the cables led _____

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

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. 02 in life boats 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 where vertical 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 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 _____ **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 Yes are they suitably stored in dry situations Yes

DESCRIPTION	NO OF MOTORS	CONDUCTORS		COMPOSITION OF STRAND		TOTAL MAXIMUM CURRENT AMPS		APPROXIMATE LENGTH LEAD RETURN FEET	INSULATED WITH	HOW PROTECTED
		NO PER POLE	TOTAL EFFECT AREA PER POLE	NO	DIA.	IN CIRCUIT	RULE			
Oil compressors	3	1	1.0	12	0.93	594	595	14.0	Rubber	Hard Rubber
Brine pumps 18 HP	3	1	0.06	19	0.64	70	83	150	"	"
" 10 "	2	1	0.0225	7	0.64	40	46	150	"	"
" 4 "	1	1	0.0045	7	0.29	16	18.2	150	"	"
Circulator pumps	2	1	0.04	19	0.52	59	64	12.0	"	"
Motor room fans	4	1	0.20	37	0.83	158	184	18.0	"	"
Keypig coolant fans 20 HP	1	1	0.06	19	0.64	80	83	14.0	"	"
" 1 1/2 "	4	1	0.0225	7	0.64	42	46	18.0	"	"
" 8 1/4 "	3	1	0.0145	7	0.52	34	37	250	"	"
" 6 1/4 "	3	1	0.01	7	0.44	26	31	210	"	"
" 3 3/4 "	2	1	0.0045	7	0.29	16	18.2	300	"	"
" 3 1/4 "	2	1	0.0045	7	0.29	16	18.2	300	"	"
Hall mark boilers	3	1	0.002	3	0.29	3	7.8	80	"	"
Ice cream plant	1	1	0.0045	7	0.29	12	18.2	60	"	"
" " " " " " " "	1	1	0.002	3	0.29	3	7.8	60	"	"
1st class passenger lift	1	1	0.01	7	0.44	25	31	240	"	Lead covered
Cabinets	1	1	0.0145	7	0.52	30	37	120	"	Hard Rubber
Engines	1	1	0.0045	7	0.29	13	18.2	120	"	"
Galley	1	1	0.003	3	0.36	9	12	180	"	"
Rubbish Hoist	1	1	0.003	3	0.36	9	12	130	"	"
Overhead crane	4	1	0.007	7	0.36	21	24	340	"	"
2-ton	1	1	0.007	7	0.36	19	24	180	"	"
Oil Purifiers 3 H.P.	5	1	0.007	7	0.36	19	24	120	"	"
" 1 1/2 "	5	1	0.003	3	0.36	9	12	75	"	"
Dup. Lub. Oil pumps	2	1	0.10	19	0.83	114	118	220	"	"
Dup. S.W. Circ "	2	1	0.06	19	0.64	73	83	150	"	"
" " " " " " " "	2	1	0.0225	7	0.64	43	46	80	"	"
Sewage ejectors	2	1	0.075	19	0.72	84	97	400	"	"
Vapour Exh. Fan	2	1	0.01	7	0.44	26	31	180	"	"
Purified Fuel Oil pump	1	1	0.04	19	0.52	47	64	120	"	"
Boiler Blowers	2	1	0.01	7	0.44	28	31	180	"	"
Galley	3	1	0.002	3	0.29	4	7.8	120	"	"
Colonel Urns	4	1	0.002	3	0.29	3	7.8	60	"	"
Sprinkler Pump	1	1	0.25	37	0.93	198	214	225	"	"
" Compressor	1	1	0.003	3	0.36	8.8	12	420	"	"
Hot Oil pumps	2	1	0.0145	7	0.52	32.5	37	90	"	"
Dup. Condenser Circ pump	1	1	0.0045	7	0.29	13	18.2	120	"	"
Boat Winches 15 H.P.	2	1	0.075	19	0.72	63	97	260	"	Lead covered
" 12 "	1	1	0.03	19	0.44	62	53	180	"	Hard Rubber
" 10 "	13	1	0.0225	7	0.64	44	46	240	"	"
Washing M/B's	2	1	0.003	3	0.36	8	12	120	"	"
Wax Mover	1	1	0.0045	7	0.29	13	18.2	180	"	"
Wax Mover Fan	1	1	0.003	3	0.36	8	12	45	"	"
Hydro Extractor	1	1	0.0045	7	0.29	16	18.2	120	"	"
Collar Mover	1	1	0.002	3	0.29	4	7.8	60	"	"
Wax Mover	1	1	0.002	3	0.29	2	7.8	60	"	"
Propeller Fan	1	1	0.002	3	0.29	3	7.8	45	"	"
Boiling Fans	3	1	0.002	3	0.29	0.5	7.8	80	"	"
Laugh Hooper	1	1	0.0045	7	0.29	13	18.2	100	"	"
Hobart " 1 H.P.	1	1	0.002	3	0.29	5	7.8	120	"	"
" 1/3 "	1	1	0.002	3	0.29	2	7.8	90	"	"
Coffee Mill	1	1	0.002	3	0.29	5	7.8	120	"	"
Painting M/B.	1	1	0.002	3	0.29	5	7.8	300	"	"
Canal Raising M/B.	1	1	0.002	3	0.29	2.5	7.8	160	"	U.S. Wood casing
Horse "	1	1	0.002	3	0.29	5.6	7.8	150	"	"
Circulator	1	1	0.002	3	0.29	6	7.8	130	"	"
Vert. Sliding Door Motor	2	1	0.0225	7	0.64	28	46	480	Rubber	Hard Rubber
Horizontal "	6	1	0.0225	7	0.64	23	46	860	"	"
L.P. Motor generator	1	1	0.003	3	0.36	8	12	30	"	"
Lathe	1	1	0.002	3	0.29	6	7.8	60	"	"
Grinding M/B.	1	1	0.003	3	0.36	8	12	60	"	"
Drilling "	1	1	0.003	3	0.36	8	12	60	"	"
Shaping "	1	1	0.0045	7	0.29	16	18.2	60	"	"

NOTE :- ALL WIRING AND CABLES IN VICINITY OF WHEELHOUSE AND WIRELESS ROOM IN V.I.R. LEAD COVERED CABLES

015348-015354-0049 2/3

015348-015354-0049 3/3

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	5	700	222	3150	260	Diesel engine		
AUXILIARY								
EMERGENCY	1	50	220	227	500	do.		
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	No. per Pole.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		Total Nominal Area per Pole Sq. Ins.	Original Pole Ins.	No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATOR	4	4		127	.103	3150	3356	72	Waxed Cambric	Lead covered
EQUALISER CONNECTIONS	2	2		127	.103	-	1678	72	do	do
AUXILIARY GENERATOR										
EMERGENCY GENERATOR	1	0.3		37	.103	227	240	75		
ROTARY TRANSFORMER										
ENGINE ROOM										
BOILER ROOM										
Accommodation										
WIRELESS	1	0.04		19	.052	15	64	1020	do	do
SEARCHLIGHT										
MASTHEAD LIGHT	1	0.002		3	.029	0.18	7.8	820	do	do
SIDE LIGHTS	1	0.002		3	.029	0.18	7.8	100	do	do
COMPASS LIGHTS	1	0.002		3	.029	0.114	7.8	30	do	do
POOP LIGHTS										
CARGO LIGHTS	1	0.12		19	.072	40	97	1100	do	do
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.			
Bilge and BALLAST PUMP	2	1	0.10	19	.083	60	118	90	Rubber	Hard Rubber
Fire and MAIN BILGE PUMPS	1	1	0.15	37	.072	118	152	600	do	do
Scavenging Blowers GENERAL SERVICE PUMP	4	4	1.0	127	.103	2190	2380	225	do	do
EMERGENCY BILGE PUMP	1	1	0.15	37	.072	107	152	900	do	do
SANITARY PUMP	2	1	0.10	19	.083	107	118	120	do	do
CIRC. SEA WATER PUMPS	4	1	0.40	61	.093	264	288	150	do	do
CIRC. FRESH WATER PUMPS	2	1	0.40	61	.093	264	288	120	do	do
AIR COMPRESSOR	3	1	0.75	91	.103	375	461	135	do	do
FRESH WATER PUMP	2	1	0.0145	7	.052	36	37	120	do	do
ENGINE TURNING GEAR	2	1	0.10	19	.083	115	118	180	do	do
ENGINE REVERSING GEAR	5	1	0.003	3	.036	12	12	90	do	do
LUBRICATING OIL PUMPS	4	1	1.0	127	.103	530	595	280	do	do
OIL FUEL TRANSFER PUMP	2	1	0.03	19	.044	47	53	120	do	do
WINDLASS	1	1	0.85	127	.093	665	680	180	do	do
WINCHES, FORWARD	2	1	0.10	19	.083	117	118	160	do	do
WINCHES, AFT	8	1	0.10	19	.083	117	118	250	do	do
Capstans Aft.	2	1	0.85	127	.093	678	680	135	do	do
STEERING GEAR										
(a) MOTOR GENERATOR	2	1	0.30	37	.103	340	351	80	do	do
(b) MAIN MOTOR	2	1	0.30	37	.103	340	351	180	do	do
WORKSHOP MOTORS	4	1	0.0225	7	.064	15	46	270	do	do
VENTILATING FANS	2	1	0.002	3	.029	1	7.8	220	do	do
do	2	1	0.002	3	.029	1	7.8	160	do	do
do	1	1	0.002	3	.029	1	7.8	150	do	do
do	1	1	0.002	3	.029	1	7.8	130	do	do
do	6	1	0.002	3	.029	6	7.8	130	do	do
do	2 1/4	1	0.003	3	.036	10	12	225	do	do
do	3	1	0.0045	7	.039	13	18	150	do	do
do	4 1/4	1	0.007	7	.036	18	24	250	do	do
do	5	1	0.01	7	.036	21	24	210	do	do
do	6 1/4	1	0.01	7	.036	26	31	120	do	do
do	9	1	0.0145	7	.052	35.5	37	180	do	do
Tunnel Port fan	1	1	0.01	7	.044	28	31	180	do	do

NOTE :- ALL WIRING AND CABLES IN VICINITY OF WHEELHOUSE AND WIRELESS ROOM IN V.I.R. LEAD COVERED CABLES

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 24th March 1938

COMPASSES.

Minimum distance between electric generators or motors and standard compass 44 Feet from Fan Motor

Minimum distance between electric generators or motors and steering compass 38 " " "

The nearest cables to the compasses are as follows:—

A cable carrying 30 Ampères 20 feet from standard compass 14 feet from steering compass.

A cable carrying 0.114 Ampères 8 feet from standard compass in feet from steering compass. Pedestal

A cable carrying 0.114 Ampères in feet from standard compass 8 feet from steering compass. Pedestal

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.



Builder's Signature.

Date

Is this installation a duplicate of a previous case? Yes. If so, state name of vessel M.V. ATHLONE CASTLE.

General Remarks (State quality of workmanship, opinions as to class, &c.) This installation has been fitted on board under special survey and in accordance with the approved plans and has been tested under full working conditions and found satisfactory. The materials and workmanship have been found to be good and sound.

Noted
R.C.
 13/4/38

2m. 12. 36.—Transfer. The Surveyors are requested not to write on or below the space for Committee's Minute.

Total Capacity of Generators 3550 Kilowatts.

The amount of Fee	£ 133 : 15 : 0	When applied for,	11. 4. 19 38
Belfast.	£ 66-1-0		
Liv.	£ 66-1-0		
Lond.	£ 1-13-0		
Travelling Expenses (if any)	£ 1 : 10 : 0	When received,	21. 5. 19 38
Lond. %c.			23. 5.

R. C. Clayton. Charles Humber.
 Surveyors to Lloyd's Register of Shipping.

Committee's Minute

FRI. 22 APR 1938

Assigned

See Bel. J.E. 12128

