

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 23 MAY 1932

Date of writing Report 19 May 1932 Port of Belfast  
 No. in Survey held at Belfast Date, First Survey 16 May 1932  
 Reg. Book. (Number of Visits.....)  
 40630 on the STEEL TWIN SC. HIGHLAND PATRIOT  
 Built at Belfast By whom built Harland & Wolff Yard No. 916 When built 1932  
 Owners Nelson Ship. Har. Co. Ltd (H.M. Nelson Ltd. Mgrs.) Port belonging to Belfast  
 Electric Light Installation fitted by Harland & Wolff Ltd. Contract No. 916 When fitted 1932  
 Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Two Wire Direct Current to Distributing Boxes.  
 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

Generators, do they comply with the requirements regarding rating 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.

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.

Position of Generators Main Generators in Motor Room, Port &amp; Star. Emergency Generators in House on Boat Deck. 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 On Switchboard Platform Fore End of 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

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.

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 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, proportion of omnibus bars Yes, individual fuses to voltmeter, pilot or earth lamp Yes, connections of switches Yes.

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches D. P. Overload Circuit Breaker with Reverse Current &amp; Time Limits, and Three Pole Main

&amp; Equalizer Isolating Switch for Each Generator Instruments on main switchboard ammeters 2 voltmeters arranged synchronising device for paralleling purposes.

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, do these comply with the requirements of the Rules Yes.

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



Lloyd's Register  
 Foundation



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

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load *10.*

Cable Sockets and other connections, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets *yes.*

Paper Insulated Cables. If cables are paper covered, is the dielectric, at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *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.*

Support and Protection of Cables, state how the cables are supported and protected *Hard Rubber Cables on Perforated Plating in Cabin Room. Lead Covered Cables on Perforated Plating in Accommodation Room. V. I. R. Braided Cables in Wood Casing in Panelled Room.*

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, if lights are fitted, are the cables and fittings in accordance with the special requirements *yes.*

Joints in Cables, state if any, and how made, insulated, and protected *Joint Boxes used for all joints*

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 *All metal portable fittings not fitted to ships' steelwork are earthed with connection equivalent to working conductors.* 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 *Emergency Dynamo House Boat Deck. Controlled from Emergency Switch board in same house. Generators direct coupled to Diesel Engines.*

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 ~~engine~~ 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 *yes.* how are the cables led *yes.* where are the controlling switches situated *yes.*

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, except vertical motors.* 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 *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 *—*

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office *—*

PARTICULARS OF GENERATING PLANT.									
DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.		
		Kilowatts.	Volts.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.	
MAIN	4	200	220	910	225	Diesel Engines			
AUXILIARY									
EMERGENCY	2	60	220	227	400	Diesel Engines			
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 Effective Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.				
MAIN GENERATOR	3	1.8	91	.083	910	1152	100	Rubber	Hard Rubber	
EQUALISER CONNECTIONS	3	1.2	91	.083	272	1152	150	"	"	
AUXILIARY GENERATOR										
EMERGENCY GENERATOR	1	.3	37	.103	227	240	51	"	Lead Covered	
EMERGENCY EQUALISER	1	.1	19	.083			25	"	"	
ENGINE ROOM										
BOILER ROOM										
EMERGENCY SWITCHBOARDS	1	.25	37	.093	210	214	750	Rubber	Hard Rubber	
ACCOMMODATION										
WIRELESS	1	.01	7	.044	15	31	780	Rubber	Lead Covered.	
SEARCHLIGHT										
MASTHEAD LIGHT	1	.003	3	.036	.18	12	200	"	"	
SIDE LIGHTS	1	.003	3	.036	.18	12	55	"	"	
COMPASS LIGHTS	1	.003	3	.036	.18	12	30	"	"	
POOP LIGHTS										
CARGO LIGHTS	1	.007	7	.036	155	24	30	"	"	
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 Effective Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	1	.06	19	.064	77	83	108	Rubber	Hard Rubber
MAIN BILGE LINE PUMPS	2	1	.04	19	.052	52	64	177	"	"
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP	1	1	.075	19	.072	88	97	591	"	"
SANITARY PUMP	1	1	.1	19	.083	111	118	180	"	"
CIRC. SEA WATER PUMPS	4	1	.12	37	.064	122	130	110	"	"
CIRC. FRESH WATER PUMPS	2	1	.06	19	.064	68	83	330	"	"
AIR COMPRESSOR										
FRESH WATER PUMP	1	1	.007	7	.036	18.5	24	189	"	"
ENGINE TURNING GEAR	2	1	.04	19	.052	58	64	300	"	"
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS	4	1	.25	37	.093	190	214	450	"	"
OIL FUEL TRANSFER PUMP	2	1	.04	19	.052	48	64	240	"	"
WINDLASS	1	1	.3	37	.103	330	352	315	"	Lead Covered
WINCHES, FORWARD 1, 2, 3	3	1	.1	19	.083	130	142	170	"	"
4, 5, 6, 7, 8, 9	6	1	.06	19	.064	92	92	210	"	"
WINCHES, AFT 10, 11, 12	3	1	.06	19	.064	92	92	450	"	"
13, 14, 15	3	1	.06	19	.064	92	92	210	"	"
16, 17, 18	3	1	.06	19	.064	92	92	570	"	"
STEERING GEAR										
(a) MOTOR GENERATOR										
(b) MAIN MOTOR	2	1	.3	37	.103	230	240	750	"	Hard Rubber
WORKSHOP MOTOR	5	1	.003	3	.036	10	12	50	"	"
VENTILATING FANS	4	1	.01	7	.044	28	31	180	"	Lead Covered
	2	1	.04	19	.052	57	64	210	"	Hard Rubber
	4	1	.003	3	.036	10	12	120	"	Lead Covered.



All Conductors are of annealed copper conforming to British Standard Specification No. 7.

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

The foregoing is a correct description

Electrical Engineers.

Date 12<sup>th</sup> May 1932

#### COMPASSES.

Distance between electric generators or motors and standard compass 160 Feet to Generators. 22 feet to nearest motor  
Distance between electric generators or motors and steering compass 156 Feet to Generators. 18 feet to nearest motor.

The nearest cables to the compasses are as follows:—

A cable carrying 39 Ampères 16 feet from standard compass. 14 feet from steering compass.

A cable carrying 32 Ampères 16 feet from standard compass. 14 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 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 12 May 1932

Is this installation a duplicate of a previous case Yes. If so, state name of vessel Highland Monarch etc

General Remarks (State quality of workmanship, opinions as to class, &c.)

This work has been done under Special Survey. The materials and workmanship are sound & good. The installation has been tried out under working conditions with satisfactory results. In my opinion the vessel is eligible for notation "Electric light."

Elec. Light

DA 23/5/32

J.

Total Capacity of Generators 900 Kilowatts.

The amount of Fee ... £ 54 : 0 : When applied for, 21<sup>st</sup> May 1932

Travelling Expenses (if any) £ : : When received, 26/5/1932

R Lee Jones

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE, 24 MAY 1932

Assigned

Elec. Light



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