

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 9 JAN 1929

Date of writing Report 21.12.1928 When handed in at Local Office 7.1.1929 Port of GLASGOW.

No. in Survey held at GLASGOW. Date, First Survey 20.8.28 Last Survey 18.12.1928
Reg. Book. (Number of Visits 20)

89809 on the T.S.S. DUCHESS OF RICHMOND.

Tons { Gross
Net

Built at CLYDEBANK. By whom built J. BROWN & CO LTD Yard No. 523 When built 1928.

Owners THE CANADIAN PACIFIC RY CO Port belonging to LONDON.

Electric Light Installation fitted by MESSRS JOHN BROWN & CO LTD Contract No. 523 When fitted 1928.

System of Distribution TWO WIRE RING MAIN.

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 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 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 MAIN SWITCH BOARD:- ON FLAT IN ENGINE ROOM. AUXILIARY SWITCHBOARDS:- IN

VARIOUS COMPARTMENTS THROUGHOUT SHIP 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 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, 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 GENERATORS:- THREE POLE

INTERLOCKED HAND AND ELECTRICALLY OPERATED CIRCUIT BREAKERS WITH O/L TRIP, TIME LAG DEVICE & REVERSE CURRENT TRIP

OUTGOING CIRCUITS:- D.P. CIRCUIT BREAKERS OR D.P. SWITCHES & FUSES ACCORDING TO CAPACITY OF THE CIRCUIT.

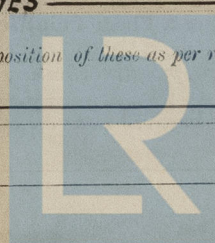
Instruments on main switchboard 19 ammeters 4 voltmeters 2 synchronising device for paralleling purposes.

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system TWO LAMPS CONNECTED IN

SERIES WITH SWITCH FOR EACH LAMP AND WIRE BETWEEN LAMPS CONNECTED TO EARTH THROUGH A SWITCH.

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



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 12.8 VOLTS (POWER) 7.5 VOLTS (LIGHTING)

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 MAIN CABLES ARE LEAD COVERED & BRAIDED OUTSIDE OF ENGINE ROOM, SECURED BY CLIPS TO WOOD GROUNDS. CABLES IN MACHINERY SPACES HAVING A SECTIONAL AREA OF 0.0225 SQ IN. AND UNDER ARE LEAD COVERED ARMORED & BRAIDED THOSE ABOVE THIS SIZE ARE LEAD COVERED & BRAIDED, ALL RUN ON 1/8" STEEL GALVANIZED PLATING SECURED BY CLIPS & PROTECTED WHERE REQUIRED. CABLES IN BOILER ROOMS ARE ALL LEAD COVERED & ARMORED & CAMBIC INSULATED OVER BOILERS. BRAIDED CABLES IN PUBLIC ROOMS RUN IN WOOD CASINGS & CONDUIT
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 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

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 AN EMERGENCY DYNAMO IS FITTED ON "B"

DECK, AFT, DIRECT COUPLED TO A PETROL PARAFFIN ENGINE. EMERGENCY SWITCHBOARD, FITTED IN SAME COMPARTMENT, SUPPLIES THREE S.P. C.O.S. SWITCHES, STEERING GEAR, BOAT WINCHES, WIRELESS, BILGE PUMP, PASSENGER LIFT, EMERGENCY SET COOLER FAN, EMERGENCY LIGHTING & BOAT LAUNCHING LIGHTS.

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

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

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

Are 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 WHERE POSSIBLE

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

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	2	500	225	2220	670	STEAM TURBINE		
EMERGENCY	2	450	225	2000	250	BURMEISTER & WAIN DIESEL ENGINE	SHELL DIESEL	214°F. CLOSED
EMERGENCY	1	75	225	333	550	PETROL PARAFFIN ENGINE	PARAFFIN.	85°F.
ROTARY TRANSFORMER								

LIGHTING AND HEATING CONDUCTORS.

Ref. No.	DESCRIPTION.	No. of Conductors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Amperes.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	MAIN GENERATOR (TURBO)	2	3	4-3/4"	COPPER BARS	2220	44.	VARNISHED TAPE	WIRE GUARD
	EQUALISER CONNECTIONS	1	1.5	2"	"	103	-	RUBBER	EXTRA HEAVILY BRAIDED.
	EMERGENCY GENERATOR (DIESEL)	10	74350	91	103	2000	110.	"	"
	EMERGENCY GENERATOR	2	60620	91	093	333	30	"	LEAD COVERED & BRAIDED.
	ROTARY TRANSFORMER								
	AUXILIARY SWITCHBOARDS								
KSL	ENGINE ROOM (PUMPS)	4	85	127	093	512	500	"	"
MEN	BOILER ROOM (RING MAIN)	4	60620	91	093	384	1200	"	LEAD COVERED ARM & BR?
A, B+C	ACCOMMODATION	4	60620	91	093	624	2100	PAPER	"
D	" (LIGHTING AFT)	2	49850	61	103	332	320	RUBBER.	LEAD COVERED & BRAIDED.
E	" (EMERGENCY)	2	60620	91	093	384	400	"	"
F	" (LIGHTING FORWARD)	4	60620	91	093	778	800	"	"
G	" (GALLEY)	8	74350	91	103	1844	120	"	"
H	" (WINCHES)	2	49850	61	103	332	260	"	"
J	"	2	49850	61	103	332	320	"	"
P	" (CREWS GALLEY)	2	49850	61	103	332	700	"	"
	WIRELESS	2	01462	7	052	37	900	"	"
	SEARCHLIGHT	2	00194	3	029	7.8	600	"	"
	MASTHEAD LIGHT	2	00194	3	029	7.8	100	"	"
	SIDE LIGHTS	2	00194	3	029	7.8	50	"	"
	COMPASS LIGHTS	2	00194	3	029	7.8	50	"	"
	POOR LIGHTS	2	00355	7	029	18.2	200	"	LEAD COVERED ARM & BR?
	CARGO LIGHTS	2	00355	7	029	18.2	200	"	"
	ARC LAMPS	2	01046	7	044	31	300	"	LEAD COVERED & BRAIDED.
	HEATERS	2	01046	7	044	31	300	"	"

MOTOR CONDUCTORS.

Ref. No.	DESCRIPTION.	No. of Motors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Amperes.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	BALLAST PUMP	2	14780	37	072	152	50	RUBBER	LEAD COVERED & BRAIDED.
	MAIN BILGE LINE PUMPS								
	GENERAL SERVICE PUMP	2	14780	37	072	152	50	"	"
	EMERGENCY BILGE PUMP	2	06000	19	064	83	900	"	LEAD COV. ARM & BR?
	SANITARY PUMP	2	14780	37	072	152	50	"	LEAD COV. & BRAIDED.
	CIRC. SEA WATER PUMPS	4	49850	61	103	332	250.	"	"
	CIRC. FRESH WATER PUMPS	2	00455	7	029	18.2	100.	"	" ARM & BR?
	COMPRESSOR C.O.2	2	30240	37	103	240.	150.	"	" & BRAIDED.
	FRESH WATER PUMP	2	02214	7	064	46	100.	"	" ARM & BR?
	ENGINE TURNING GEAR	2	06000.	19.	064.	83	150.	"	" & BRAIDED.
	ENGINE REVERSING GEAR	4	10090.	19.	083.	118.	240.	"	"
	LUBRICATING OIL PUMPS	2	06000	19	064.	83	120.	"	" ARM & BR?
	OIL FUEL TRANSFER PUMP	1	74350.	91	103.	461.	200	"	" & BRAIDED.
	WINDLASS	14.	10090.	19	083	118	200.	"	LEAD COVERED & BRAIDED & V.I.R. BRAIDED IN CONDUIT.
	WINCHES, FORWARD	8	03960.	19.	052.	64.	180.	"	"
	WINCHES, AFT	4.	02214.	7.	064.	46.	120.	"	"
	STEERING GEAR								
	MAIN MOTOR	2	19640.	37	083	184	420.	"	LEAD COV. ARM & BR?
	WORKSHOP MOTOR	2	00455	7	029	18.2	150	"	"
	VENTILATING FANS	2	01046	7	044.	31.0	300	"	"
	"	2	02214	7	064.	46.0	300	"	"
	"	7	00701.	7	036.	24.0	50	"	LEAD COVERED & BRAIDED.
	"	4.5.	00293	3	036.	12.0	50	"	"
	FORCED DRAUGHT FANS.	6	06000.	19	064.	46.0	320.	"	LEAD COV. ARM & BR?
	HOTWELL PUMPS	2	10090.	19	083	118	75	"	LEAD COVERED & BR?
	CAPSTANS	4	74650.	37	093	214.	200	"	"
	LIFTS	2	02214.	7	064.	46	540	"	"
	"	3	00701.	7	036	24.	70.	"	"

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.

John Brown & Company, Limited.

McInderson
Clydebank Secretary.

Electrical Engineers.

Date

COMPASSES.

Distance between electric generators or motors and standard compass 55 FEET FROM WIRELESS MACHINE

Distance between electric generators or motors and steering compass 45 " " " "

The nearest cables to the compasses are as follows:—

A cable carrying 68 Ampères 15 feet from standard compass 10 feet from steering compass.

A cable carrying 1 Ampères 1 feet from standard compass 1 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 course in the case of the standard

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

John Brown & Company, Limited.

McInderson
Clydebank Secretary.

Builder's Signature.

Date

Is this installation a duplicate of a previous case Yes

If so, state name of vessel

Duchess of Bedford.

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

This installation has

been fitted on board under special survey.
Tested under full working conditions and found
satisfactory.

The materials and workmanship were
found to be good and sound.

It is submitted that
this vessel is eligible for
THE RECORD.

Elec Light

10/1/29

Total Capacity of Generators 1975 Kilowatts.

The amount of Fee ... £ 80.17.6. : When applied for, 26.12.1928

Travelling Expenses (if any) £ : : When received, 12.1.1929

Committee's Minute GLASGOW 8 - JAN 1929

Assigned Elec Light

J. S. Rankin
Surveyor to Lloyd's Register of Shipping.



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Lloyd's Register
Foundation