

Rpt. 13.

No. 48094

REPORT ON ELECTRIC FITTINGS

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London on 27 JUN 1928

Date of writing Report 6.6.1928 When handed in at Local Office 23.6.1928 Port of GLASGOW.

No. in Survey held at DALMUIR. Date, First Survey 1.12.27 Last Survey 18.6.1928
Reg. Book. (Number of Visits 25)

14038 on the S.S. DUCHESS OF ATHOLL.
Built at DALMUIR. By whom built W^M BEARDMORE & CO Yard No. 648 When built 1928.
Owners THE CANADIAN PACIFIC S.S. CO. Port belonging to

Electric Light Installation fitted by MESSRS W^M BEARDMORE & CO. LTD Contract No. 648 When fitted 1928.

System of Distribution TWO 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 rating YES / , are they compound wound YES /
are they over compounded 5 per cent. - , 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 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 ENGINE 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 electric 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 /

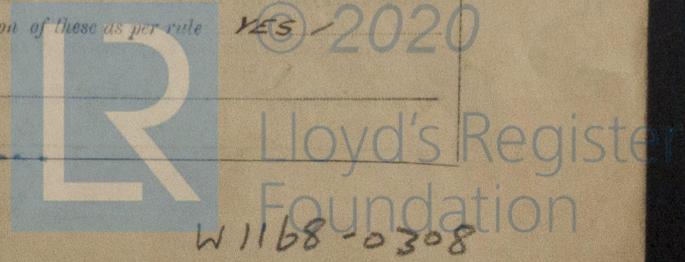
Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches
DOUBLE POLE MAIN & EQUALISER BREAKER WITH NO VOLT, OVERLOAD, &
REVERSE CURRENT COILS FOR EACH GENERATOR

Instruments on main switchboard 5 ammeters 5 voltmeters - 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 LEAKAGE INDICATOR & 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 /



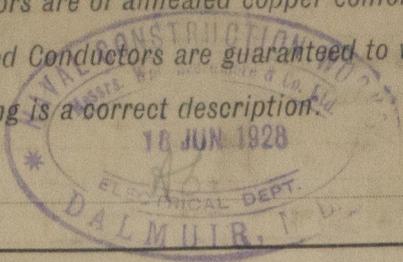
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Cables: Single, twin, concentric, or multicore SINGLE are the cables insulated and protected as per Tables IV or V of the Rules YES
Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load 8'
Cable Sockets and other connections, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets
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 L.C. & B. CABLES ARE SECURED TO WOOD OR METAL TRAYS BY CLIPS
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
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
Alternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule
Emergency Supply, state position and method of control of the emergency supply and how the generator is driven
EMERGENCY SUPPLY FROM OIL DRIVEN GENERATOR THROUGH SWITCHBOARD IN EMERGENCY GENERATOR ROOM ON 'C' DECK
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
PENDANT IS REMOVED & LAMPHOLDER COVER SCREWED ON
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
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
 If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office

| DESCRIPTION OF GENERATOR | No. of | RATED AT | | | | DRIVEN BY | WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE | |
|--------------------------|--------|-----------|-------|---------|----------------|---------------|---|---------------------|
| | | Kilowatts | Volts | Amperes | Revs. per Min. | | Fuel Used | Flash Point of Fuel |
| MAIN | 2 | 500 | 225 | 2220 | 670 | STEAM TURBINE | | |
| AUXILIARY | 2 | 450 | 225 | 2000 | 250 | DIESEL ENGINE | | |
| EMERGENCY | 1 | 75 | 225 | 333 | 530 | OIL ENGINE | | |
| ROTARY TRANSFORMER | | | | | | | | |

| 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 | 2 | 3.0 | 4 | 3x.25 STRIPS | 2220 | 36 | EMPIRE TAPE | SHEET IRON COVERED |
| | EQUALISER CONNECTIONS | 1 | 1.5 | 2 | 3x.25 " | 1110 | 18 | " | " |
| | MAIN AUXILIARY GENERATOR | 10 | .7435 | 91 | .103 | 2000 | 150 | V.I.R. | BRAIDED |
| | EQUALISER CONNECTION | 3 | .7435 | 61 | .103 | 1000 | 75 | " | " |
| | EMERGENCY GENERATOR | 2 | .7435 | 91 | .103 | 333 | 90 | " | " |
| | ROTARY TRANSFORMER | | | | | | | | |
| | AUXILIARY SWITCHBOARDS | 4 | .6062 | 91 | .093 | 83 | 381 | PAPER | L.C. & B. |
| | ENGINE ROOM | 4 | .6062 | 91 | .093 | 976 | 428 | " | " |
| | BOILER ROOM | 4 | .6062 | 91 | .093 | 1902 | 381 | " | " |
| | ACCOMMODATION | 2 | .4985 | 61 | .103 | 271 | 267 | V.I.R. | L.C. & B. |
| | " | 2 | .6062 | 91 | .093 | 512 | 516 | " | " |
| | " | 4 | .6062 | 91 | .093 | 410 | 536 | " | " |
| | " | 8 | .7435 | 91 | .103 | 1091 | 140 | " | " |
| | " | 2 | .4985 | 61 | .103 | 520 | 285 | " | " |
| | " | 2 | .4985 | 61 | .103 | 61 | 258 | " | " |
| | " | 2 | .8459 | 127 | .093 | 541 | 254 | " | " |
| | " | 2 | .8459 | 127 | .093 | 541 | 270 | " | " |
| | " | 4 | .6062 | 91 | .093 | 359 | 540 | " | L.C. & B. |
| | " | 4 | .6062 | 91 | .093 | 379 | 297 | " | " |
| | " | 2 | .4985 | 61 | .103 | 125 | 510 | " | L.C. & B. |
| | WIRELESS | 2 | .0145 | 7 | .052 | 12 | 1020 | " | " |
| | SEARCHLIGHT | | | | | | | | |
| | MASTHEAD LIGHT | 2 | .0045 | 7 | .029 | 4.6 | 500 | " | L.C. & B. & TUBING ON MAST |
| | SIDE LIGHTS | 2 | .0019 | 3 | .029 | 4.5 | | " | L.C. & B. |
| | COMPASS LIGHTS | 2 | .0019 | 3 | .029 | 4.5 | | " | " |
| | POOP LIGHTS | 2 | .0026 | 7 | .029 | 4.5 | 120 | " | " |
| | CARGO LIGHTS | 2 | .0026 | 7 | .029 | 4.5 | 120 | " | " |
| | ARC LAMPS | | | | | | | | |
| | HEATERS | 2 | .0045 | 7 | .029 | 4.6 | 90 | " | CASING |

| 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 | | .1478 | 37 | .072 | 147 | 45 | V.I.R. | L.C. & B. |
| | MAIN BILGE LINE PUMPS | | .1478 | 37 | .072 | 147 | 45 | V.I.R. | " |
| | GENERAL SERVICE PUMP | | .1478 | 37 | .072 | 147 | 45 | " | " |
| | EMERGENCY BILGE PUMP | | .0600 | 19 | .064 | 727 | 900 | " | " |
| | SANITARY PUMP | | .1478 | 37 | .072 | 147 | 45 | " | " |
| | CIRC. SEA WATER PUMPS | | .0221 | 7 | .064 | 25 | 171 | " | L.C. & B. |
| | CIRC. FRESH WATER PUMPS | | .0221 | 7 | .064 | 44 | 216 | " | " |
| | AIR COMPRESSOR | | .0045 | 7 | .029 | 15 | 225 | " | " |
| | FRESH WATER PUMP | | .0146 | 7 | .052 | 34 | 216 | " | " |
| | ENGINE TURNING GEAR | | .0600 | 19 | .064 | 80 | 180 | " | L.C. & B. |
| | ENGINE REVERSING GEAR | | | | | | | " | " |
| | LUBRICATING OIL PUMPS | | .1009 | 19 | .083 | 100 | 150 | " | " |
| | OIL FUEL TRANSFER PUMP | | .0600 | 19 | .064 | 80 | 144 | " | " |
| | WINDLASS | | .8459 | 127 | .093 | 918 | 200 | " | " |
| | WINCHES, FORWARD | | .1009 | 19 | .083 | 130 | 133 | " | CASING |
| | WINCHES, AFT | | .1009 | 19 | .083 | 130 | 135 | " | " |
| | STEERING GEAR | | | | | | | " | " |
| | (a) MOTOR GENERATOR | | .1478 | 37 | .072 | 150 | 426 | " | L.C. & B. |
| | (b) MAIN MOTOR | | | | | | | " | " |
| | WORKSHOP MOTOR | | .0245 | 7 | .029 | 16 | 124 | " | " |
| | VENTILATING FANS BOILER ROOM | | .0029 | 3 | .036 | 8 | 270 | " | " |
| | FORCED DRAUGHT | | .0600 | 19 | .064 | 83 | 210 | " | L.C. & B. |
| | ENGINE ROOM FAN | | .0221 | 7 | .064 | 40 | 216 | " | L.C. & B. |
| | " | | .0104 | 7 | .044 | 28 | 216 | " | " |
| | VENTILATING FAN | | .0070 | 7 | .036 | 22 | 192 | " | L.C. & B. |
| | " | | .0029 | 3 | .036 | 9 | 48 | " | " |
| | " | | .0029 | 3 | .036 | 6 | 78 | " | " |
| | CAPSTAN AFT | | .2465 | 37 | .093 | 264 | 135 | " | " |
| | " FORW ² | | .2465 | 37 | .093 | 264 | 210 | " | " |

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 _____

COMPASSES.

| | | | |
|---|---------------------|----------|---------------|
| | EMERGENCY GENERATOR | 400 FEET | |
| Distance between electric generators or motors and standard compass | MAIN GENERATOR | 250 FEET | MOTOR 35 FEET |
| | EMERGENCY GENERATOR | 395 FEET | |
| Distance between electric generators or motors and steering compass | MAIN GENERATOR | 245 FEET | MOTOR 30 FEET |

The nearest cables to the compasses are as follows:—

- A cable carrying 11 Ampères 15 feet from standard compass 10 feet from steering compass.
- A cable carrying 12 Ampères 15 feet from standard compass 10 feet from steering compass.
- A cable carrying 68 Ampères 15 feet from standard compass 10 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 N/L degrees on N/L course in the case of the standard compass, and N/L degrees on STEERING course in the case of the steering compass.

FOR WILLIAM BEARDMORE & CO. LIMITED.

J. R. Cameron Builder's Signature. Date 18/6/28.

Is this installation a duplicate of a previous case Yes. If so, state name of vessel Duchess 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 load conditions & found satisfactory. The materials & workmanship were found to be good and sound.

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

J. Rankin
3/7/28

Total Capacity of Generators 1975 Kilowatts.

The amount of Fee ... £ 80.17.6 : 13. 6. 1928 When applied for,

Travelling Expenses (if any) £ : : 18. 0. 1928 When received,

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

Committee's Minute GLASGOW 26 JUN 1928

Assigned Elec Light

