

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office FEB - 2 1938

Date of writing Report 25. 1. 1938 When handed in at Local Office 1. 2. 1938 Port of Glasgow.
 No. in Survey held at Ardrossan Date, First Survey 10. 11. 37 Last Survey 21. 1. 1938
 Reg. Book. "WELSH COAST" (Number of Visits 4)
 40718 on the M.V. "WELSH COAST"
 Built at Ardrossan By whom built Ardrossan Dockyard Ltd No. 368 When built 1938
 Owners Coast Line Ltd Port belonging to Liverpool.
 Electric Light Installation fitted by Campbell & Isherwood Ltd Contract No. 368 When fitted 1938
 Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution

Pressure of supply for Lighting 220 ✓ volts, Heating - 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 -

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 In Engine Room near generators ✓

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 Shidanyo ✓, 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

Triple pole Circuit Breakers with 1/2 H.C. Bips (one pole of breaker in equation) for each generator. S.P. switch

S.P. fuses 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 - Instruments on main switchboard 3 ✓ ammeters 2 ✓

voltmeters - 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 Lamp ✓ Switches, Circuit Breakers and Fusible Cut-outs,

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* ✓

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 - Twin* are the cables insulated and protected as per Tables IV, V, X or XI of the Rules *Yes* ✓

If the cables are insulated otherwise than as per Rule, are they of an approved type *3 volts* ✓

any point of the installation under maximum load *Yes* ✓

area of 0.04 square inch and above provided with soldering sockets *Yes* ✓

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* ✓

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 in machinery spaces, galleys, lavatories, bathrooms and lavatories lead covered or run in conduit *Yes or L.R.* ✓

Support and Protection of Cables, state how the cables are supported and protected *Main L.R. Braided in gals. conduit* ✓

heavily space L.C.A.B. or L.R. Braided clipped or in conduit. Accommodation L.R. Braided - clipped ✓

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* ✓

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 *Lead covering and armouring of cables efficiently bonded & earthed* ✓

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 *Yes* ✓

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 *Yes - protected by strong glass & guards* ✓

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 *Yes* ✓

whether fixed or portable *Yes* ✓

are their fittings as per Rule *Yes* ✓

Are Lamps, other than searchlight lamps, No. of *Yes* ✓

are their live parts insulated from the frame or case *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 or 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 *Yes* ✓

if not of this type, state distance of the combustible material horizontally or vertically above the motors *Yes* ✓

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing *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 filled 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 type approved by the Home Office *Yes* ✓

Spare Gear, if the vessel is for open sea service have spares been supplied as per Rule *Yes* ✓

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 | 3 | 40 | 220 | 182 | 1000 | Oil Engine | Distil Oil | Above 150°F. |
| AUXILIARY | | | | | | | | |
| EMERGENCY | | | | | | | | |
| ROTARY TRANSFORMER | | | | | | | | |

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

| 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. | Rule. | | | |
| MAIN GENERATOR | 2 | .15 | 19 | .072 | 182 | 194 | 44 | Rubber | L.C.A.B. |
| EQUALISER CONNECTIONS | 1 | .075 | 19 | .072 | - | 97 | 22 | " | " |
| AUXILIARY GENERATOR | | | | | | | | | |
| EMERGENCY GENERATOR | | | | | | | | | |
| ROTARY TRANSFORMER | | | | | | | | | |
| ENGINE ROOM | 1 | .003 | 3 | .036 | 3 | 12 | 12 | " | L.R. Braided |
| BOILER ROOM | | | | | | | | | |
| AUXILIARY SWITCHBOARDS | | | | | | | | | |
| Lighting Section Board | 1 | .01 | 7 | .044 | 26 | 31 | 90 | " | L.C.A.B. |
| ACCOMMODATION | | | | | | | | | |
| Navigation D.B. | 1 | .003 | 3 | .036 | 3.5 | 12 | 280 | " | L.R. Braided & Conduit |
| Hold " Iron D.B. | 1 | .003 | 3 | .036 | 5 | 12 | 60 | " | " |
| WIRELESS | 1 | .007 | 7 | .036 | 15 | 24 | 280 | " | " |
| SEARCHLIGHT | 1 | .003 | 3 | .036 | 18 | 12 | 300 | " | " |
| MASTHEAD LIGHT | 1 | .003 | 3 | .036 | 18 | 12 | 40 | " | L.R. Braided |
| SIDE LIGHTS | 1 | .003 | 3 | .036 | 10 | 12 | 40 | " | " |
| COMPASS LIGHTS | 1 | .003 | 3 | .036 | 4.5 | 12 | 12 | " | L.R. Braided & Conduit |
| POOP LIGHTS | | | | | | | | | |
| CARGO LIGHTS | | | | | | | | | |
| ARC LAMPS | | | | | | | | | |
| HEATERS | | | | | | | | | |

MOTOR CONDUCTORS.

| 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. | Rule. | | | |
| BALLAST PUMP | 1 | 1 | .007 | 7 | .036 | 18 | 24 | 34 | Rubber | L.C.A.B. |
| MAIN BILGE LINE PUMPS | | | | | | | | | " | " |
| GENERAL SERVICE PUMP | 1 | 1 | .007 | 7 | .036 | 18 | 24 | 34 | " | " |
| EMERGENCY BILGE PUMP | | | | | | | | | | |
| SANITARY PUMP | | | | | | | | | | |
| CIRC. SEA WATER PUMPS | | | | | | | | | | |
| CIRC. FRESH WATER PUMPS | 2 | 1 | .03 | 19 | .044 | 55 | 53 | 22 | " | " |
| AIR COMPRESSORS | | | | | | | | | | |
| FRESH WATER PUMP | 1 | 1 | .0045 | 7 | .029 | 16.7 | 182 | 60 | " | " |
| ENGINE TURNING GEAR | | | | | | | | | | |
| ENGINE REVERSING GEAR | 2 | 1 | .04 | 19 | .052 | 42.5 | 64 | 20 | " | " |
| LUBRICATING OIL PUMPS | 1 | 1 | .003 | 3 | .036 | 7.4 | 12 | 40 | " | " |
| OIL FUEL TRANSFER PUMP | 1 | 1 | .04 | 19 | .052 | 67.5 | 68 | 12 | " | L.R. Braided & Conduit |
| WINDLASS | 1 | 1 | .15 | 37 | .072 | 105 | 152 | 230 | " | " |
| WINCHES, FORWARD | 2 | 1 | .10 | 19 | .083 | 105 | 118 | 60 | " | " |
| WINCHES, AFT | 1 | 1 | .15 | 37 | .072 | 105 | 152 | 110 | " | " |
| CAPSTAN | 1 | 1 | .04 | 19 | .052 | 67.5 | 68 | 210 | " | " |
| STEERING GEAR | | | | | | | | | | |
| (a) MOTOR GENERATOR | 1 | 1 | .01 | 7 | .044 | 25 | 31 | 180 | " | L.R. Braided |
| (b) MAIN MOTOR | | | | | | | | | | |
| WORKSHOP MOTOR | | | | | | | | | | |
| VENTILATING FANS | 1 | 1 | .003 | 3 | .036 | 3.5 | 12 | 110 | " | " |
| Lab. Oil purifiers | | | | | | | | | | |
| Power Section box "S" | | | .12 | 37 | .064 | 126 | 130 | 100 | " | L.C.A.B. |
| " Dis box 401 | | | .075 | 19 | .072 | 95 | 97 | 140 | " | " |
| " " 402 | | | .007 | 7 | .036 | 18 | 24 | 30 | " | " |
| Forward Pumps, D.B. | | | .20 | 37 | .083 | 193 | 194 | 247 | " | L.R. Braided & Conduit |

All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electro-technical Commission Publication No. 28).

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

The foregoing is a correct description.

CAMPBELL & SHERWOOD LTD.

Electrical Engineers.

Date 27-1-38

COMPASSES.

Distance between electric generators or motors and standard compass

160 ft

Distance between electric generators or motors and steering compass

160 ft

The nearest cables to the compasses are as follows:—

A cable carrying 10 Amperes 6 feet from standard compass 6 feet from steering compass.

A cable carrying 10 Amperes 6 feet from standard compass 6 feet from steering compass.

A cable carrying 3.5 Amperes 8 feet from standard compass 9 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

1/2

degrees on

any

course in the case of the standard

compass, and

1/2

degrees on

any

course in the case of the steering compass.

FOR ANDROSSAN DOCKYARD, LIMITED

John C. Coleman

Builder's Signature.

Date

29/1/38

Is this installation a duplicate of a previous case

Yes

If so, state name of vessel

h.v. "Hartford Coast"

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

The electrical equipment of

this vessel has been fitted on board under special survey, tested under full working conditions & found satisfactory. The materials & workmanship are good.

1/2/38.

Noted.

2-2-38.

Total Capacity of Generators 120 Kilowatts.

The amount of Fee ... £ 34: 10 : 0

When applied for,

1 FEB 1938

Travelling Expenses (if any) £

14: 3

When received.

3/1/38

Committee's Minute

GLASGOW

1 FEB 1938

IRH

Assigned SEE ACCOMPANYING MACHINERY REPORT



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