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3 DEC 1943

Rpt. 13.

No. 33853

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

Date of writing Report 15th Dec 1943 When handed in at Local Office 22 DEC 1943 Port of Sunderland

No. in Survey held at Sunderland and Date, First Survey 14th Oct 1943 Last Survey 21st Dec 1943
Reg. Book. Suppt. Walsund (Number of Visits 8)

37346 on the S.S. "EMPIRE BERESFORD" Tons { Gross 78.2.4 Net 57.9.3

Built at Sunderland By whom built Sir J. Laing & Co., Ltd. Yard No. 713 When built 1943

Owners Ministry of War Transport Port belonging to Sunderland

Electrical Installation fitted by The Sunderland Engineering Co. Ltd. Contract No. 713 When fitted 1943

Is vessel fitted for carrying Petroleum in bulk Yes Is vessel equipped with D.F. Yes E.S.D. Yes Gy.C. No Sub.Sig. No

Have plans been submitted and approved Yes System of Distributions Two wire insulated Voltage of supply for Lighting 110

Heating 110 Power 110 Direct or Alternating Current, Lighting Yes Power Yes If Alternating Current state periodicity Prime Movers,

has the governing been tested and found as per Rule when full load is suddenly thrown on and off Yes Are turbine emergency governors fitted with a trip switch as per Rule Generators, are they compound wound Yes, are they level compounded under working conditions Yes

if not compound wound state distance between generators and from switchboard Where more than one generator is fitted are they arranged to run in parallel Yes, are shunt field regulators provided Yes Is the compound winding connected to the negative or positive pole

negative Yes Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Have certificates of test for machines under 100 kw. been supplied Yes and the results found as per rule Yes Are the lubricating arrangements and the construction of the generators as per rule Yes

Position of Generators Engine room port side on platform at aft end is the ventilation in way of generators satisfactory Yes are they clear of inflammable material Yes, if situated near unprotected combustible material state distance from same horizontally and vertically are the generators protected from mechanical injury and damage from water, steam and oil Yes, are the bedplates and frames earthed Yes and the prime movers and generators in metallic contact Yes

Switchboards, where are main switchboards placed Engine room port side aft beside engine room door are they in accessible positions, free from inflammable gases and acid fumes Yes, are they protected from mechanical injury and damage from water, steam and oil Yes, if situated near unprotected combustible material state distance from same horizontally and vertically, what insulation material is used for the panels "Economy Linoleum", if of synthetic insulating material is it an Approved Type Yes, if of semi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule Is the frame effectually earthed Yes

Is the construction as per Rule Yes, including accessibility of parts Yes, absence of fuses on the back of the board Yes, individual fuses to pilot and earth lamps, voltmeters, etc. Yes locking of screws and nuts Yes, labelling of apparatus and fuses Yes, fuses on the "dead" side of switches Yes

Description of Main Switchgear for each generator and arrangement of equaliser switches Double pole quick break knife switch and double pole fuse

and for each outgoing circuit Double pole double throw quick break knife switch and double pole fuse

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard Two ammeters Two voltmeters synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the equaliser connection Earth Testing, state means provided Flanges connected to E through one of fuses

Switches, Circuit Breakers and Fuses, are they as per Rule Yes, are the fuses an approved type Yes, are all fuses labelled as per Rule Yes If circuit breakers are provided for the generators, at what overload current did they open when tested, are the reversed current protection devices connected on the pole opposite to the equaliser connection, have they been tested under working conditions, and at what current did they operate Joint Boxes, Section Boards and Distribution Boards, is the construction and position as per Rule Yes

Cables, are they insulated and protected as per the appropriate Tables of the Rules Yes, if otherwise than as per Rule are they of an approved type Yes, state maximum fall of pressure between bus bars and any point under maximum load 6.6 V., are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets Yes Are paper insulated and varnished cambric insulated cables sealed at the ends Yes

with insulating compound or waterproof insulating tape. *Yes* Are all the cable runs in accessible positions, not exposed to drip or accumulation of water or oil, high temperatures or risk of mechanical damage. *Yes* are cables laid under machines or floorplates. *No* if so, are they adequately protected. *Yes* Are cables in machinery spaces, galleys, laundries, etc., lead covered. *Yes* or run in conduit. *Yes* State how the cables are supported and protected. *L.C.A.B. cables run in wood clut along inside of fire and aft gangway and clipped to surface or tray in machinery spaces. L.C.B. cables clipped to wood grounds or to surface in accommodation spaces.*

Are all lead sheaths, armouring and conduits effectually bonded and earthed. *Yes* Refrigerated chambers, are the cables and fittings as per Rule. *Yes*

Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands. *Yes* where unarmoured cables pass through beams, etc., are the holes effectively bushed. *Yes* and with what material. *Lead or fibre* Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule. *Yes* Emergency Supply, state position. *Yes*

and method of control. *Yes*

Navigation Lamps, are they separately wired. *Yes* controlled by separate double pole switches. *Yes* and fuses. *Yes* Are the switches and fuses in a position accessible only to the officers on watch. *Yes* is an automatic indicator fitted. *Yes* Secondary Batteries, are they constructed and fitted as per Rule. *Yes* are they adequately ventilated. *Yes* what is the battery capacity in ampere hours. *Yes*

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof. *Yes* Are fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present. *Yes* if so, how are they protected. *Yes* flameproof lighting fittings installed in suitable enclosed space and where are the controlling switches fitted. *Yes* are all fittings suitably ventilated. *Yes*

are all fittings and accessories constructed and installed as per Rule. *Yes* Searchlight Lamps, No. of. *Yes* whether fixed or portable. *Yes* are their fittings as per Rule. *Yes* Heating and Cooking, is the general construction as per Rule. *Yes*

are the frames effectually earthed. *Yes* are heaters in the accommodation of the convection type. *Yes* Motors, are all motors constructed and installed as per Rule. *Yes* and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water, steam and oil. *Yes* if situated near unprotected combustible material state minimum distance from same horizontally. *Yes* and vertically. *Yes* Are motors coupled to oil fuel transfer and unit pressure pumps capable of being stopped from a position accessible in the event of fire in the pump compartment. *Yes*

Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing. *Yes* Have certificates of test for motors under 100 BHP intended for essential services been supplied and the results found as per Rule. *Yes* Control Gear and Resistances, are they constructed and fitted as per Rule. *Yes* Lightning Conductors, where required are they fitted as per Rule. *Yes* Ships carrying Oil having a Flash Point

less than 150° F. Have all the special requirements of the Rules for such ships been complied with. *Yes* are all fuses of the cartridge type. *Yes* are they of an approved type. *Yes* Are the fittings for pump rooms, 'tween deck spaces, etc., in accordance with the special requirements for such ships. *Yes* Are the cables lead covered as per Rule. *Yes* Spare Gear, if the vessel is for open sea service have spares been provided as per Rule. *Yes* are they suitably stored in dry situations. *Yes* Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory. *Yes*

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 | 2 | 30 | 110 | 275 | 850 | Single cylinder steam engine | | |
| EMERGENCY | | | | | | | | |
| ROTARY TRANSFORMER | | | | | | | | |

GENERATOR CABLES.

| DESCRIPTION. | KILOWATTS. | CONDUCTORS. | | MAXIMUM CURRENT IN AMPERES. | | APPROX. LENGTH (lead plus return feet). | INSULATED WITH. | HOW PROTECTED. |
|---------------------------|------------|---------------------------|--|-----------------------------|---------|---|-----------------|----------------|
| | | No. in Parallel Per Pole. | Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm. | In the Circuit. | Rule. | | | |
| MAIN GENERATORS | 2 x 30 | 2 | 19/064 | 275 | 2 x 135 | 24 x 30 | V.C. | L.C. |
| " " EQUALISER | | | | | | | | |
| EMERGENCY GENERATOR | | | | | | | | |
| ROTARY TRANSFORMER: MOTOR | | | | | | | | |
| " " GENERATOR | | | | | | | | |

MAIN DISTRIBUTION CABLES.

| DESCRIPTION. | No. in Parallel Per Pole. | CONDUCTORS. | | MAXIMUM CURRENT IN AMPERES. | | APPROX. LENGTH (lead plus return feet). | INSULATED WITH. | HOW PROTECTED. |
|--------------------------------------|---------------------------|--|-----------------|-----------------------------|-----|---|-----------------|----------------|
| | | Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm. | In the Circuit. | Rule. | | | | |
| AUX. SWITCHBOARDS AND SECTION BOARDS | | | | | | | | |
| Trunking to Gangway 2nd | 1 | 37/072 | 125 | 246 | 720 | V.C. | L.C.A.B. | |
| Trunking to Aft 2nd | 1 | 37/072 | 125 | 246 | 820 | do | do | |
| Aft to 2nd | 1 | 19/064 | 83 | 135 | 170 | do | do | |
| E.R. Aft to 2nd | 1 | 19/064 | 33 | 135 | 20 | do | do | |

LIGHTING AND HEATING, ETC., CABLES.

| | | | | | | | | |
|------------------------|---|-------|----|----|-----|------|----------|--|
| WIRELESS | 1 | 7/064 | 35 | 75 | 100 | V.C. | L.C.B. | |
| NAVIGATION LIGHTS | 1 | 7/064 | 4 | 31 | 110 | W.E. | do | |
| LIGHTING AND HEATING | | | | | | | | |
| Upper Bridge to 2nd | 1 | 7/064 | 12 | 31 | 75 | W.E. | L.C.B. | |
| Bridge to 2nd | 1 | 7/064 | 22 | 31 | 15 | do | do | |
| Mid & 2nd Cargo to 2nd | 1 | 7/064 | 12 | 31 | 15 | do | do | |
| Aft to 2nd | 1 | 7/064 | 12 | 31 | 110 | do | do | |
| Charging Board | 1 | 7/064 | 3 | 31 | 130 | do | do | |
| Lower Prop to 2nd | 1 | 7/064 | 20 | 31 | 30 | do | do | |
| Lower Prop to 2nd | 1 | 7/064 | 21 | 31 | 75 | do | do | |
| Upper Prop to 2nd | 1 | 7/064 | 13 | 31 | 30 | do | do | |
| Upper Prop to 2nd | 1 | 7/064 | 9 | 31 | 110 | do | do | |
| Communication to 2nd | 1 | 7/064 | - | 31 | 100 | do | do | |
| Aft Cargo to 2nd | 1 | 7/064 | 2 | 31 | 30 | do | do | |
| 2nd to 2nd | 1 | 7/064 | 29 | 31 | 30 | do | L.C.A.B. | |
| 2nd Charging Board | 1 | 3/129 | 3 | 5 | 20 | do | do | |

MOTOR CABLES.

| ALL IMPORTANT MOTORS TO BE ENUMERATED. | No. | B.H.P. | | | | | | |
|--|-----|--------|---|-------|----|----|-----|---------------|
| Vent Fan (off 2nd to 2nd) | 1 | 4 | 1 | 7/064 | 33 | 75 | 230 | V.C. L.C.A.B. |
| Vent Fan (off 2nd to 2nd) | 1 | 3 | 1 | 7/064 | 25 | 31 | 100 | W.E. L.C.B. |
| Workshop motor (Cable only) | 1 | | 1 | 7/064 | - | 31 | 42 | do. L.C.A.B. |

The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.
All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.
The foregoing is a correct description.

P. PRO THE SUNDERLAND FORGE & ENGINEERING CO., LTD.

Electrical Engineers.

Date 16-12-1943

COMPASSES.

Minimum distance between electric generators or motors and standard compass 290 feet

Minimum distance between electric generators or motors and steering compass 286 feet

The nearest cables to the compasses are as follows:—

A cable carrying 1/4 Ampères on the feet from standard compass 7 feet from steering compass.

A cable carrying 1/4 Ampères 7 feet from standard compass on the 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 Every course in the case of the standard compass, and Nil degrees on Every course in the case of the steering compass.

For and on behalf of

Builder's Signature.

Date 18-12-43

Is this installation a duplicate of a previous case Yes

Managing Director

If so, state name of vessel "Empire Collins"

Plans. Are approved plans forwarded herewith Yes

If not, state date of approval 7/5/42 & 19/5/42

Certificates. Are certificates of test for motors engaged on essential services and generators forwarded herewith Yes

General Remarks (State quality of workmanship, whether insulation tests, etc., have been made, opinions as to class, etc.) The electrical

equipment of this vessel has been installed under special survey in accordance with the approved plans and with the specification and amendments thereto. The materials used are of good quality and the workmanship is good. On completion the equipment was run under working conditions with satisfactory results and the insulation resistance of all circuits was measured and found good. This equipment is in my opinion suitable for a classed vessel intended for the carrying of petroleum in bulk.

Noted
18/1/44

Total Capacity of Generators 60 Kilowatts.

The amount of Fee ...

£ 35 : 12/6 :

When applied for,

22 DEC 1943

(Incl. Spring.)

Travelling Expenses (if any) £ :

When received.

19.....

Garrison

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 21 JAN 1944

Assigned

see minute
on J.B. Rpt.



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Lloyd's Register
Foundation