

No. 66469

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 11 JAN 1943

Writing Report on 22nd Dec. 1942 When handed in at Local Office 19. 1. 43 Port of GLASGOW

Survey held at GLASGOW & PORT GLASGOW Date, First Survey 13th OCTOBER Last Survey 30th DECEMBER 1942 (Number of Visits 13)

on the EMPIRE PENNANT Tons { Gross Net

at PORT GLASGOW By whom built LITHGOWS LTD Yard No. 972 When built 1942

ers. MINISTRY OF WAR TRANSPORT Port belonging to GREENOCK

trical Installation fitted by SWANDELAND FORGE & ENGINEERING CO LTD Contract No. 972 When fitted 1942

essel fitted for carrying Petroleum in bulk Is vessel equipped with D.F. YES E.S.D. ONLY Gy.C. Sub.Sig.

Plans been submitted and approved YES System of Distribution Two wire Voltage of supply for Lighting 110

ating Power 110 Direct or Alternating Current, Lighting D.C. Power D.C. If Alternating Current state frequency Prime Movers,

the governing been tested and found efficient when the whole load is suddenly thrown on and off YES Are turbine emergency governors fitted with a

p switch as per Rule YES Generators, are they compound wound YES, are they level compounded under working conditions YES

not compound wound state distance between generators and from switchboard Where more than one generator is fitted are they

ranged to run in parallel YES, are shunt field regulators provided YES Is the compound winding connected to the negative or positive pole

Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Have certificates of

st for machines under 100 kw. been supplied YES and the results found as per rule YES Are the lubricating arrangements and the construction

f the generators as per rule YES Position of Generators In engine room

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 In engine room near generators

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 Sindanga, 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 circuit breakers fitted with overload and reverse current trips

Double pole knife pattern switches with fuses

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Instruments on main switchboard 7

ammeters 3 voltmeters synchronising devices For compound machines in parallel is the ammeter connected on the pole opposite to the

equaliser connection YES Earth Testing, state means provided earth lamps

003971-003979-0059

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Switches, Circuit Breakers and Fuses, are they as per Rule Yes, are the fuses an approved type Yes, are all fuses labelled per Rule Yes, are the reversed current protection devices connected on the pole opposite to the equaliser connection Yes, have they been tested under working conditions Yes.

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 W.E.

state maximum fall of pressure between bus bars and any point under maximum load Power 6.3 Volts. Lighters 3.6 Volts. 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 exposed 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 _____, if so, are they adequately protected _____.

Are cables in machinery spaces, galleys, laundries, etc., lead covered _____ or run in conduit Yes. State how the cables are supported and protected Mains: V.I.R. In steel pipe

Machinery Space: V.I.R. + H.R. In conduit

Accommodation: L.C. clipped to wood (W.E.)

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

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 effectually bushed Yes and with what material Fibres.

Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule Yes. Emergency Supply, state position _____ and method of control _____.

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 _____, are they adequately ventilated _____.

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 _____, if so, how are they protected _____.

and where are the controlling switches fitted _____, are all fittings suitably ventilated Yes.

are all fittings and accessories constructed and installed as per Rule Yes. Searchlight Lamps, No. of _____, whether fixed or portable _____, are their fittings as per Rule _____.

Heating and Cooking, is the general construction as per Rule _____, are the frames effectually earthed _____, are heaters in the accommodation of the convection type _____.

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 _____ and vertically _____.

Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing _____, 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.

Lighting Conductors, where required are they fitted as per Rule _____.

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 _____, are all fuses of the cartridge type _____, are they of an approved type _____.

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained battery-fed flameproof type _____.

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 megger 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. | Amps. | Revs. per Min. | | Fuel Used. | Flash Point of Fuel. |
| MAIN ... | 3 | 33 | 110 | 300 | 640 | 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 GENERATOR | 33 | 1 | 37/083 | 300 | 296 | 60 | V.C. | L.C. |
| " " EQUALISER | | | 19/083 | | 191 | 60 | V.C. | L.C. |
| EMERGENCY GENERATOR | | | | | | | | |
| ROTARY TRANSFORMER: MOTOR | | | | | | | | |
| " " GENERATOR | | | | | | | | |

MAIN DISTRIBUTION CABLES.

| DESCRIPTION. | KILOWATTS. | CONDUCTORS. | MAXIMUM CURRENT IN AMPERES. | APPROX. LENGTH (lead plus return feet). | INSULATED WITH. | HOW PROTECTED. |
|--------------------------------------|------------|-------------|-----------------------------|---|-----------------|----------------|
| AUX. SWITCHBOARDS AND SECTION BOARDS | | | | | | |

LIGHTING AND HEATING, ETC., CABLES.

| DESCRIPTION. | KILOWATTS. | CONDUCTORS. | MAXIMUM CURRENT IN AMPERES. | APPROX. LENGTH (lead plus return feet). | INSULATED WITH. | HOW PROTECTED. | |
|---------------------------------------|------------|-------------|-----------------------------|---|-----------------|----------------|------------|
| WIRELESS | | 1 | 7/064 | 15 | 46 | 400 V.I.R. | IN CONDUIT |
| NAVIGATION LIGHTS | | | | | | | |
| LIGHTING AND HEATING | | 1 | 7/064 | 22.6 | 46 | 400 V.I.R. | IN CONDUIT |
| CREW & RET. CARGO LIGHTS | | 1 | 7/064 | 38.5 | 46 | 150 V.I.R. | IN CONDUIT |
| ENGINEERS LIGHTING | | 1 | 19/064 | 47 | 83 | 350 V.I.R. | IN CONDUIT |
| SAMSON, NAVIGATION & FWD CARGO LIGHTS | | 1 | 7/044 | 21 | 31 | 60 RUBBER | L.C. |
| ENGINE ROOM LIGHTING | | | | | 10 | 200 W.E. | IN CONDUIT |
| CARGO PLUGS ON SAMSON POSTS | | 1 | 1/064 | | 10 | 170 W.E. | IN CONDUIT |
| LIGHTS IN FORECASTLE | | 1 | 1/064 | | 10 | 700 W.E. | IN CONDUIT |
| STERN LIGHT | | | | | | | |

MOTOR CABLES.

| ALL IMPORTANT MOTORS TO BE ENUMERATED. | No. | B.H.P. | CONDUCTORS. | MAXIMUM CURRENT IN AMPERES. | APPROX. LENGTH (lead plus return feet). | INSULATED WITH. | HOW PROTECTED. | |
|--|-----|--------|-------------|-----------------------------|---|-----------------|----------------|------------|
| REFRIGERATOR CIRCULATING PUMP | 1 | 10 | 1 | 19/064 | 80 | 135 | 60 V.C. | L.C. |
| REFRIGERATOR FAN N°1 | 1 | 12.5 | 1 | 19/083 | 100 | 118 | 350 V.I.R. | IN CONDUIT |
| REFRIGERATOR FAN N°2 | 1 | 12.5 | 1 | 19/083 | 100 | 118 | 350 V.I.R. | IN CONDUIT |
| REFRIGERATOR FAN N°3 | 1 | 8.25 | 1 | 19/064 | 66 | 83 | 190 V.I.R. | IN CONDUIT |
| REFRIGERATOR FAN N°4 | 1 | 8.25 | 1 | 19/064 | 66 | 83 | 190 V.I.R. | IN CONDUIT |
| DOMESTIC REFRIGERATOR | 1 | 2.5 | 1 | 7/044 | 21.7 | 31 | 350 V.I.R. | IN CONDUIT |

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 24/12/42.

J. S. Hawks

COMPASSES.

Minimum distance between electric generators or motors and standard compass 40 FEET

Minimum distance between electric generators or motors and steering compass 35 FEET

The nearest cables to the compasses are as follows:—

A cable carrying 2 Ampères *led into* feet from standard compass *led into* feet from steering compass.

A cable carrying 7.3 Ampères 6 feet from standard compass 6 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 *any* course in the case of the standard compass, and *nil* degrees on *any* course in the case of the steering compass.

LITHGOWS LIMITED.

J. M. Gardiner Secretary

Builder's Signature.

Date 4/1/43.

Is this installation a duplicate of a previous case *Yes* If so, state name of vessel *EMPIRE GALAHAD*

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 fitted on board under special survey, tested under working conditions and found satisfactory. All the requirements of the approved plans and M.O.W.T. Specification have been carried out. The materials and workmanship are good.

216
19/1/43

Noted
J. M. Gardiner
22/1/43

Total Capacity of Generators 99 Kilowatts.

| | | | |
|------------------------------|------------|------------------|----------------|
| The amount of Fee ... | £ 32 : 8/6 | When applied for | <i>at C.M.</i> |
| SPECIFICATION ... | £ 8 : 2/6 | When received | <i>5/1/43</i> |
| Travelling Expenses (if any) | £ 1 : 2/6 | | |

J. M. Gardiner
Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 19 JAN 1943

Assigned *See G. R. & C. Report - 22115*

2m.10.35.—Transfer. (MADE IN ENGLAND.) (The Surveyors are requested not to write on or below the space for Committee's Minute.)



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