

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 21 MAR 1935

Date of writing Report 11th Nov. 1935 When handed in at Local Office 23. 3. 1935 Port of GLASGOW.

No. in Survey held at GREENOCK. Date, First Survey 10. 1. 35 Last Survey 15-3-1935
 Reg. Book. 91467 on the M.V. "TRIASTER" (Number of Visits...10)

Built at PORT GLASGOW. By whom built LITHGOWS LTD. Yard No. 872 When built 1935

Owners BRITISH PHOSPHATE COMMISSIONERS. Port belonging to LONDON.

Electric Light Installation fitted by THE SUNDERLAND FORGE & ENG. CO. LTD Contract No. _____ When fitted 1935.

Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution 400 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. 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 Main Engine Room. bottom platform port side. ✓, 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 Engine Room on special platform. ✓
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 micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework Yes ✓

and is the frame effectually 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 ✓

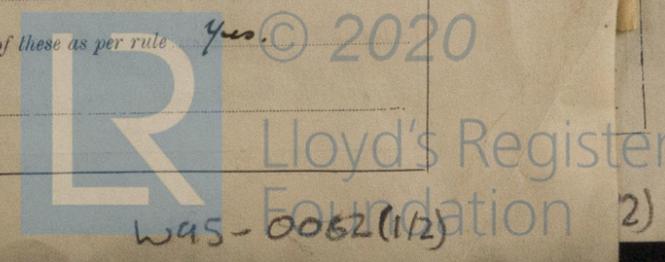
Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches Triple pole circuit breakers fitted with Reverse Current trips for each generator & either D.P. circuit breakers fitted with overload trips or D.P. switches and fuses for each outgoing circuit. ✓

Instruments on main switchboard 7 ammeters 3 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 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. ✓



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 | 3 | 120 | 220 | 545 | 425 | Oil Engine | Quint Oil | Open 150° F |
| AUXILIARY | | | | | | do | do | do |
| EMERGENCY | 1 | 15 | 220 | 68 | 1000 | do | do | do |
| ROTARY TRANSFORMER | | | | | | | | |

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

| DESCRIPTION. | CONDUCTORS. | | COMPOSITION OF STRAND. | | TOTAL MAXIMUM CURRENT AMPERES. | | Approximate Length (Lead and Return) Feet. | Insulated with | HOW PROTECTED. |
|--------------------------------------|---------------|--|------------------------|-----------|--------------------------------|------------|--|----------------|----------------|
| | No. per Pole. | Total Effective Area per Pole Sq. Ins. | No. | Diameter. | In Circuit. | Rule. | | | |
| MAIN GENERATOR | 2 | .500 | 37 | .093 | 545 | 618 | 70 | V.C. | L.C.A.B. |
| EQUALISER CONNECTIONS | 1 | .25 | 37 | .093 | - | 309 | 70 | V.C. | L.C.A.B. |
| AUXILIARY GENERATOR | | | | | | | | | |
| EMERGENCY GENERATOR | 1 | .04 | 19 | .052 | 68 | 94 | 30 | V.C. | L.C.B. |
| ROTARY TRANSFORMER MOTOR | | | | | | | | | |
| ROTARY TRANSFORMER GENERATOR | 1 | .007 | 7 | .036 | 21 | 24 | 30 | V.I.R. | L.C.A.B. |
| ENGINE ROOM | | | | | | | | | |
| BOILER ROOM | | | | | | | | | |
| AUXILIARY SWITCHBOARDS | | | | | | | | | |
| NAVIGATION | 1 | .0045 | 7 | .029 | 8 | 18.2 | 240 | V.I.R. | L.C.B. |
| AFT RING MAIN | 2 | .24 | 37 | .064 | 412 | 452 (3/4) | 480 | V.C. | L.C.A.B. |
| FORWARD RING MAIN | 2 | .70 | 61 | .083 | 1040 | 1070 (3/4) | 760 | V.C. | L.C.A.B. |
| ACCOMMODATION | | | | | | | | | |
| AFT LIGHTING, TWAIN DECK LUG ENGINES | 1 | .06 | 19 | .064 | 78 | 122 | 480 | V.C. | L.C.A.B. |
| MIDSHIP LIGHTING | 1 | .04 | 19 | .052 | 66 | 94 | 155 | V.C. | L.C.B. |
| EMERGENCY LIGHTING | 1 | .002 | 3 | .029 | 6.2 | 7.8 | 40 | V.I.R. | L.C.A.B. |
| EMERGENCY BOARD (INTERCOMM) | 1 | .04 | 19 | .062 | 87 | 94 | 135 | V.C. | L.C.A.B. |
| WIRELESS | 1 | .0225 | 7 | .064 | 15 | 46 | 220 | V.I.R. | L.C.A.B. |
| SEARCHLIGHT | | | | | | | | | |
| MASTHEAD LIGHT | 1 | .002 | 3 | .029 | .18 | 7.8 | 350 | V.I.R. | L.C.A.B. |
| SIDE LIGHTS | 1 | .002 | 3 | .029 | .18 | 7.8 | 60 | V.I.R. | L.C.B. |
| COMPASS LIGHTS | 1 | .002 | 3 | .029 | .18 | 7.8 | 30 | V.I.R. | L.C.B. |
| POOP LIGHTS | | | | | | | | | |
| CARGO LIGHTS | 1 | .04 | 19 | .052 | 58 | 94 | 180 | V.C. | L.C.B. |
| ARC LAMPS | | | | | | | | | |
| HEATERS BOAT & BRIDGE DECK | 1 | .06 | 19 | .064 | 95.6 | 122 | 170 | V.C. | L.C.B. |
| UPPER DECK | 1 | .06 | 19 | .064 | 105 | 122 | 155 | V.C. | L.C.B. |

MOTOR CONDUCTORS.

| DESCRIPTION. | No. of Motors. | CONDUCTORS. | | COMPOSITION OF STRAND. | | TOTAL MAXIMUM CURRENT AMPERES. | | Approximate Length (Lead and Return) Feet. | Insulated with | HOW PROTECTED. |
|-------------------------|----------------|---------------|--|------------------------|-----------|--------------------------------|-----------|--|----------------|----------------|
| | | No. Per Pole. | Total Effective Area per Pole Sq. Ins. | No. | Diameter. | In Circuit. | Rule. | | | |
| BALLAST PUMP | 2 | 1 | .04 | 19 | .052 | 77 | 94 | 320 | V.C. | L.C.A.B. |
| MAIN BILGE LINE PUMPS | | | | | | | | | | |
| GENERAL SERVICE PUMP | | | | | | | | | | |
| EMERGENCY BILGE PUMP | 1 | 1 | .04 | 19 | .052 | 48 | 64 | 400 | V.I.R. | L.C.A.B. |
| SANITARY PUMP | 1 | 1 | .03 | 19 | .044 | 48 | 53 | 130 | V.I.R. | L.C.A.B. |
| CIRC. SEA WATER PUMPS | 2 | 1 | .06 | 19 | .064 | 97 | 122 | 60 | V.C. | L.C.A.B. |
| CIRC. FRESH WATER PUMPS | | | | | | | | | | |
| AIR COMPRESSOR | 1 | 1 | .35 | 61 | .083 | 325 | 381 | 75 | V.C. | L.C.A.B. |
| FRESH WATER PUMP | 1 | 1 | .0045 | 7 | .029 | 14 | 18.2 | 50 | V.I.R. | L.C.A.B. |
| ENGINE TURNING GEAR | 1 | 1 | .0225 | 7 | .064 | 40 | 46 | 50 | V.I.R. | L.C.A.B. |
| ENGINE REVERSING GEAR | | | | | | | | | | |
| LUBRICATING OIL PUMPS | 2 | 1 | .10 | 19 | .083 | 145 | 172 | 240 | V.C. | L.C.A.B. |
| OIL FUEL TRANSFER PUMP | 2 | 1 | .007 | 7 | .036 | 21 | 24 | 60 | V.I.R. | L.C.A.B. |
| WINDLASS (ANCHOR) | 1 | 1 | .20 | 37 | .083 | 278 | 338 (3/4) | 260 | V.C. | L.C.A.B. |
| WINCHES, FORWARD | 6 | 1 | .10 | 19 | .083 | 164 | 172 | 60 | V.C. | L.C.B. |
| CAPSTANS FORWARD | 2 | 1 | .10 | 19 | .083 | 156 | 172 | 50 | V.C. | L.C.A.B. |
| CAPSTANS AFT | 2 | 1 | .10 | 19 | .083 | 156 | 172 | 150 | V.C. | L.C.A.B. |
| WINCHES, AFT | 4 | 1 | .10 | 19 | .083 | 164 | 172 | 90 | V.C. | L.C.B. |
| MOORING WINDLASSES | 2 | 1 | .35 | 61 | .083 | 460 | 535 (3/4) | 90 | V.C. | L.C.A.B. |
| STEERING GEAR | | | | | | | | | | |
| (a) MOTOR GENERATOR | 2 | 1 | .04 | 19 | .052 | 77 | 94 | 205 | V.C. | L.C.A.B. |
| (b) MAIN MOTORS | 1 | 1 | .0045 | 7 | .029 | 18 | 18.2 | 100 | V.I.R. | L.C.A.B. |
| WORKSHOP MOTOR | | | | | | | | | | |
| VENTILATING FANS | | | | | | | | | | |
| OIL PURIFIERS | 3 | 1 | .003 | 1 | .064 | 9 | 12.9 | 40 | V.I.R. | L.C.A.B. |
| CARGO OIL PUMP | 1 | 1 | .20 | 37 | .083 | 249 | 266 | 270 | V.C. | L.C.A.B. |
| REFRIGERATOR COMPRESSOR | 1 | 1 | .04 | 19 | .062 | 77 | 94 | 170 | V.C. | L.C.A.B. |
| " BRINE PUMP | 1 | 1 | .003 | 1 | .064 | 9 | 12.9 | 85 | V.I.R. | L.C.A.B. |
| " CIRCULATING " | 2 | 1 | .0045 | 7 | .029 | 13 | 18.2 | 50 | V.I.R. | L.C.A.B. |
| " FANS | 2 | 1 | .0015 | 1 | .044 | 5 | 6.1 | 120 | V.I.R. | L.C.A.B. |

Cables: Single, twin, concentric, or multicore *All types* 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 *5-3 Volts*

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 *—*

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, L.C.A.B. run on steel plates through linear ducts protected by sheet steel covers. Machinery space L.C.A.B. clipped. Accommodation, L.C.A.B. clipped.*

If cables are run in wood casings, are the casings and caps secured by screws *—*, are the cap screws of brass *—*, are the cables run in separate grooves *—*. 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 *metallic sheathing & armoring of cables efficiently bonded together by means of special bonding glands or clips.* 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 *Emergency Generator and Switchboard fitted in Emergency Space Room off Main Engine Room. Emergency circuits interconnected with Main Switchboard through D.P. Change-over switch. Generator driven by Oil Engine.*

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 *—*

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 glass, well pans and metal 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 *—* 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 *—*

Arc 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 *—* 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 *—* 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 *—*

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.

p.pro. THE SUNDERLAND FORGE & ENG. CO.LTD.,

J. C. Shanks

Electrical Engineers.

Date 15.3.35.

COMPASSES.

Distance between electric generators or motors and standard compass 120 ft

Distance between electric generators or motors and steering compass 110 ft

The nearest cables to the compasses are as follows:—

A cable carrying 18 Ampères 24 in. feet from standard compass 24 in. feet from steering compass.

A cable carrying 15 Ampères 20 feet from standard compass 15 feet from steering compass.

A cable carrying 8 Ampères 10 feet from standard compass 6 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.

LITHGOWS LIMITED.

John M. Fuleo Secretary

Builder's Signature.

Date 19/3/35

Is this installation a duplicate of a previous case No. If so, state name of vessel

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.

23/3/35

Noted L.Y. 27/3/35

Total Capacity of Generators 375 Kilowatts.

The amount of Fee ... £ 40 : 17 : 6

Travelling Expenses (if any) £ : 10/6

H. Haffner
Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 26 MAR 1935

Assigned See Greenock Wash. Report. No 19929.

1m, 9, 30, -1 transfer. (The Surveyors are requested not to write on or below the space for Committee's Minutes.)

