

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

JAN 10 1940

Date of writing Report *20<sup>th</sup> Dec. 39* When handed in to Local Office *6-1-40* Port of *Glasgow*  
 No. in Survey held at *Port Glasgow & Fremack.* Date, First Survey *1939 Aug. 24* Last Survey *27<sup>th</sup> Dec. 39*  
 Reg. Book. *38761* on the *M.Y. "DESMOULEA"* Tons { Gross  
 Net  
 Built at *Port Glasgow.* By whom built *Lithgows. Ltd.* Yard No. *920* When built *1939*  
 Owners *Anglo Saxon Petroleum Co. Ltd.* Port belonging to *London.*  
 Electric Light Installation fitted by *Sunderland Forge & Eng. Co. Ltd.* Contract No. *920* When fitted *1939*  
 Is the Vessel fitted for carrying Petroleum in bulk *Yes.*

## System of Distribution

Pressure of supply for Lighting *110* volts, Heating *—* volts, Power *110* 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 *Yes.*in way of the generators satisfactory *Yes.* are they clear of all inflammable material *Yes.* if situated near unprotectedwoodwork 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 generatorsin metallic contact *Yes.* Main Switch Boards, where placed *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 mechanicalinjury and damage from water, steam or oil *Yes.*, if situated near unprotected woodwork or other combustible material, state distance of samehorizontally from or vertically above the switchboards *—* and *—*, are they constructed wholly of durable, non-ignitable non-absorbentmaterials *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 othernon-hygroscopic insulating material, and the slab similarly insulated from its framework *Inter. sh.*, is the non-hygroscopic insulating material of an approvedtype *Yes.*, and is the frame effectively earthed *Yes.* Are the fittings as per Rule regarding: spacing or shielding of live partsaccessibility of all parts *Yes.*, absence of fuses on back of board *Yes.*, temperature rise ofomnibus bars *Yes.*, individual fuses to voltmeter, pilot or earth lamp *Yes.*, are moving parts of switches alive in the"off" position *Yes.* are all screws and nuts securing connections effectively locked *Yes.* are any fuses fitted on the live side ofswitches *Yes.*

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches

*Each generator controlled by DP. Switch & Fuses, each outgoing circuit controlled by DP. % Switch*Are turbine driven generators fitted with emergency trip switch as per rule *—* Are cupboards or compartments containing switchboards composed offire-resisting material or lined with approved material *Yes.* Instruments on main switchboard *2* ammeters *2*voltage meters *—* synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection

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 *Yes.*do these comply with the requirements of the Rules *Yes.* are the fusible cut-outs of an approved type *Yes.* have the reversed

current protection devices been tested under working conditions

construction, protection, insulation, material, and position of these as per Rule

Cables: Single, twin, concentric, or multi-core are the cables insulated and protected as per Tables IV, V, X or XI of the Rules

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

any point of the installation under maximum load

area of 0.04 square inch and above provided with soldering sockets

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 or waterproof insulating tape

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

Support and Protection of Cables, state how the cables are supported and protected

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

Refrigerated Chambers, are the cables and fittings in accordance with the special requirements

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

Bushes in Beams and Non-watertight Partitions, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed

Earthing Connections, state what earthing connections are fitted and their respective sectional areas

are their connections made as per Rule

Alternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule

Navigation Lamps, are these separately wired, controlled by separate switch and separate fuses, are the fuses double pole

are the switches and fuses grouped in a position accessible only to the officers on watch

has each navigation lamp an automatic indicator as per Rule

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight

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

any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected

are the cables led

where are the controlling switches situated

are all fittings suitably ventilated, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials

Heating and Cooking Appliances, are they constructed and fitted as per Rule, are air heaters constructed and fitted as per Rule

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, are the coils self-contained and readily removable for replacement

are the brushes, brush holders, terminals and lubricating arrangements as per Rule, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material

water, steam or oil, are they protected from mechanical injury and damage from

material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type

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

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing

field and motor speed regulators, starters and controllers constructed and fitted as per Rule

are required, are these fitted as per Rule

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 self-contained, battery-fed type approved by the Home Office

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

Joint Boxes, Section and Distribution Boards, is the

Fall of Pressure, state maximum between bus bars and

Cable Sockets, are the ends of all cables having a sectional

Paper Insulated and Varnished Cambric Insulated Cables.

Cable Runs, are the cables fixed as far as possible in accessible positions

Mains, L.C.P. in galvanised steel pipe or deck, wiring in machinery space L.C.A.B clipped, wiring in accommodation L.C. clipped

are the cap screws of brass, are the cables run in

If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII

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## 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                      | 1      | 20         | 110    | 182      | 400.           | Steam engine | oil  | above 160°F.         |
| MAIN                      | 1      | 20         | 110    | 182      | 400.           | I.C. engine. |  |                      |
| 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. | In Circuit.            | Rule. |  |                |                |
| MAIN GENERATOR         | 1             | 0.1                                  | 19                     | .083      | 182                    | 191   | 70   | r.c.           | L.C.A.         |
| SHORE CONNECTIONS      | 1             | 0.1                                  | 19                     | .083      | 182                    | 191   | 180  | r.c.           | L.C.A.         |
| AUXILIARY GENERATOR    |               |                                      |                        |           |                        |       |  |                |                |
| EMERGENCY GENERATOR    |               |                                      |                        |           |                        |       |  |                |                |
| ROTARY TRANSFORMER     |               |                                      |                        |           |                        |       |  |                |                |
| ENGINE ROOM            | 1             | 0.06                                 | 19                     | .064      | 544                    | 135   | 112  | r.c.           | L.C.A.         |
| BOILER ROOM            |               |                                      |                        |           |                        |       |  |                |                |
| AUXILIARY SWITCHBOARDS |               |                                      |                        |           |                        |       |  |                |                |
| AFT. S.B.              | 1             | 0.06                                 | 19                     | .064      | 59                     | 135   | 160  | r.c.           | L.C.A.         |
| MIDSHIP S.B.           | 1             | 0.1                                  | 19                     | .083      | 80.7                   | 191   | 590  | r.c.           | L.C.A.         |
| ACCOMMODATION          |               |                                      |                        |           |                        |       |  |                |                |
| NAVIGATION DB.         | 1             | .01                                  | 7                      | .044      | 8.2                    | 31    | 720  | Rubber.        | L.C.A.         |
| CARGO DB.              | 1             | .06                                  | 19                     | .064      | 7.7                    | 135   | 200  | r.c.           | L.C.A.         |
| MIDSHIP CARGO DB.      | 1             | .01                                  | 7                      | .044      | 4.4                    | 31    | 460  | Rubber.        | L.C.A.         |
| WIRELESS               | 1             | 0.0025                               | 7                      | .064      | 23                     | 75    | 740  | r.c.           | L.C.A.         |
| SEARCHLIGHT            | 1             | 0.06                                 | 19                     | .064      | 60                     | 135   | 1068   | r.c.           | L.C.A.         |
| MASTHEAD LIGHT         | 1             | 0.0015                               | 1                      | .044      | 0.36                   | 6.1   | 430  | Rubber.        | L.C.A.         |
| SIDE LIGHTS            | 1             | 0.0015                               | 1                      | .044      | 0.36                   | 6.1   | 60   | Rubber.        | L.C.           |
| COMPASS LIGHTS         | 1             | 0.0015                               | 1                      | .044      | 0.2                    | 6.1   | 40   | Rubber.        | L.C.           |
| 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            |                |               |                                      |                        |           |                        |       |  |                |                |
| MAIN BILGE LINE PUMPS   |                |               |                                      |                        |           |                        |       |  |                |                |
| GENERAL SERVICE PUMP    |                |               |                                      |                        |           |                        |       |  |                |                |
| EMERGENCY BILGE PUMP    |                |               |                                      |                        |           |                        |       |  |                |                |
| SANITARY PUMP           |                |               |                                      |                        |           |                        |       |  |                |                |
| CIRC. SEA WATER PUMPS   |                |               |                                      |                        |           |                        |       |  |                |                |
| CIRC. FRESH WATER PUMPS |                |               |                                      |                        |           |                        |       |  |                |                |
| AIR COMPRESSOR          |                |               |                                      |                        |           |                        |       |  |                |                |
| FRESH WATER PUMP        |                |               |                                      |                        |           |                        |       |  |                |                |
| ENGINE TURNING GEAR     | 1              | 1             | 0.03                                 | 19                     | .044      | 83                     | 87    | 134  | r.c.           | L.C.A.         |
| ENGINE REVERSING GEAR   |                |               |                                      |                        |           |                        |       |  |                |                |
| LUBRICATING OIL PUMPS   |                |               |                                      |                        |           |                        |       |  |                |                |
| OIL FUEL TRANSFER PUMP  |                |               |                                      |                        |           |                        |       |  |                |                |
| WINDLASS                |                |               |                                      |                        |           |                        |       |  |                |                |
| WINCHES, FORWARD        |                |               |                                      |                        |           |                        |       |  |                |                |
| WINCHES, AFT            |                |               |                                      |                        |           |                        |       |  |                |                |
| STEERING GEAR—          |                |               |                                      |                        |           |                        |       |  |                |                |
| (a) MOTOR GENERATOR     |                |               |                                      |                        |           |                        |       |  |                |                |
| (b) MAIN MOTOR          |                |               |                                      |                        |           |                        |       |  |                |                |
| WORKSHOP MOTOR          |                |               |                                      |                        |           |                        |       |  |                |                |
| VENTILATING FANS        | 1              | 1             | .01                                  | 7                      | .044      | 25                     | 31.0  | 192  | Rubber.        | L.C.A.         |
| MIDSHIP.                | 1              | 1             | .01                                  | 7                      | .044      | 25                     | 31.0  | 160  | "              | "              |
| FUEL OIL PUMP.          | 1              | 1             | .0045                                | 7                      | .029      | 15.9                   | 18.2  | 168  | "              | "              |
| OIL PURIFIER            | 1              | 1             | .0045                                | 7                      | .029      | 16.8                   | 18.2  | 140  | "              | "              |
| DRILLING MACHINE        | 1              | 1             | .0045                                | 7                      | .029      | 17.7                   | 18.2  | 250  | "              | "              |
| GRINDING MACHINE.       | 1              | 1             | .01                                  | 7                      | .044      | 24.5                   | 31.0  | 250  | "              | "              |
| LATHE.                  | 1              | 1             | .0045                                | 7                      | .029      | 13.8                   | 18.2  | 260  | "              | "              |

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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.

P.Pro.

THE SUNDERLAND FORGE & ENGINEERING CO. LTD.

Electrical Engineers.

Date 21st December 1939.

#### COMPASSES.

Distance between electric generators or motors and standard compass

36 feet.

Distance between electric generators or motors and steering compass

32 feet.

The nearest cables to the compasses are as follows:—

A cable carrying 0.2 Amperes led into from standard compass led into from steering compass.

A cable carrying 60 Amperes 12 feet from standard compass 8 feet from steering compass.

A cable carrying Amperes 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 *an f.* course in the case of the standard compass, and nil degrees on *an f.* course in the case of the steering compass.

#### LITHGOWS LIMITED.

*James M. Fullerton* Secretary

Builder's Signature.

Date 28/12/39

Is this installation a duplicate of a previous case *Yes*.

If so, state name of vessel

M.V. "DELPHINULA"

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 and found satisfactory. The materials and workmanship are good.

*Noted*  
*L.H.*  
*13/1/40*

*608*  
*6/1/40*

Total Capacity of Generators 40. Kilowatts.

The amount of Fee ... £ 25 : - : When applied for, 19...

Travelling Expenses (if any) £ 18/7 : When received, 19/1/40 *L.*

Committee's Minute GLASGOW 9 JAN 1940

Assigned SEE ACCOMPANYING MACHINERY REPORT.

*H.G. Findlay*

Surveyor to Lloyd's Register of Shipping.



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