

Rpt. 13.

No. 93536

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

Date of writing Report

19

When handed in at Local Office

7.3.36

Port of Newcastle-on-Tyne

No. in Survey held at

Date, First Survey

16 Jan.

Last Survey

18 Feb.

1936

Reg. Book. Sub.

(Number of Voids)

39091

on the

M. S. "Mastra"

Tons

Gross 6193

Net 3627

Built at

Wallasey-on-Tyne

By whom built

J. Hunter & Wigham Richardson

Yard No. 1511

When built 1936

Owners

Anglo-Bacon Petroleum Co.

Port belonging to

London

Electric Light Installation fitted by

J. Hunter & Wigham Richardson Ltd.

Contract No. 1511

When fitted 1936

Is the Vessel fitted for carrying Petroleum in bulk

yes

System of Distribution

Double wire

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

no

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

Engine Room starboard 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

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

Engine Room starboard side

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

-

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

yes

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

omnibus bars

yes

accessibility of all parts

yes

absence of fuses on back of board

yes

temperature rise of

“off” position

no

individual fuses to voltmeter, pilot or earth lamp

yes

are moving parts of switches alive in the

switches

no

are all screws and nuts securing connections effectively locked

yes

are any fuses fitted on the live side of

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

double pole circuit breaker for each generator, double pole changeover switches & 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

yes

Instruments on main switchboard

2

ammeters

2

voltmeters

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

Lamps connected to earth through switches & fuses

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

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current protection devices been tested under working conditions *none*. **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* 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 *—*. **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load *2.0 Volts*. **Cable Sockets**, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets *yes*. **Paper Insulated and Varnished Cambric Insulated Cables**, 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 *—*. **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*. Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit *yes*.

Support and Protection of Cables, state how the cables are supported and protected *Lead covered slipped up in accommodation, lead covered & removed in galv. iron pipes under fore safe gangways, lead covered & armoured slipped up in machinery spaces.* 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, 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 *—*, 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 *none*.

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 *nil*.

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 *nil*.

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected *Pump Room fittings fitted in gastight recesses accessible from deck in galvanised steel conduit.* where are the controlling switches situated *midship accommodation*.

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 *—*, are air heaters constructed and fitted as per Rule *—*.

Searchlight Lamps, No. of *1*, whether fixed or portable *portable*, are their fittings as per Rule *yes*.

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 *yes*, 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 *—*, 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 *—*. **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 *not required*. **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 fitted 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 *nil*.

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. | Amperes. | Revs. per Min. | | Fuel Used. | Flash Point of Fuel. | |
| MAIN | 2 | 16 | 110 | 145. | { One driven by steam engine. One " " Kromschroeder motor. | | | | |
| AUXILIARY | | | | | | | | | |
| EMERGENCY | | | | | | | | | |
| 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 Nominal Area per Pole Sq. Ins. | No. | Diameter. | Circuit. | Rule. | | | |
| MAIN GENERATOR | 1 | .150 | 34 | .042 | 145 | 152 | 70 | V.I.R. | Lead covered & armoured. |
| EQUALISER CONNECTIONS | | | | | | | | | |
| AUXILIARY GENERATOR | | | | | | | | | |
| EMERGENCY GENERATOR | | | | | | | | | |
| ROTARY TRANSFORMER } MOTOR GENERATOR | | | | | | | | | |
| ENGINE ROOM | | | | | | | | | |
| BOILER ROOM | 1 | .040 | 19 | .052 | 52 | 64. | 30. | V.I.R. | Lead covered & armoured. |
| AUXILIARY SWITCHBOARDS | | | | | | | | | |
| Shore supply | 1 | .100 | 19 | .083 | 100 | 118 | 140 | do. | do. |
| Cargo lights | 1 | .004 | 7 | .036 | 8.8 | 24. | 120. | do. | do. |
| Navigation | 1 | .004 | 7 | .036 | 4 | 24 | 630 | do. | do. |
| Midship & forward | 1 | .075 | 19 | .072 | 62 | 94 | 600. | do. | do. |
| ACCOMMODATION aft | 1 | .0225 | 7 | .064 | 46 | 46. | 120. | do. | do. |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| WIRELESS | 1 | .0225 | 7 | .064 | 15 | 46 | 610 | do. | do. |
| SEARCHLIGHT | 1 | .040 | 19 | .052 | 60 | 64 | 900 | do. | do. |
| MASTHEAD LIGHT | 1 | .002 | 3 | .029 | .3 | 7.8 | 380. | do. | do. |
| SIDE LIGHTS | 1 | .002 | 3 | .029 | .3 | 7.8. | 90. | do. | do. |
| COMPASS LIGHTS | 1 | .002 | 3 | .029 | .1 | 7.8 | 80 | do. | Lead covered. |
| POOP LIGHTS | 1 | .002 | 3 | .029 | .3 | 7.8. | 600. | do. | Lead covered & armoured. |
| CARGO LIGHTS | 1 | .002 | 3 | .029 | 2.1. | 7.8 | 80. | do. | Lead covered. |
| ARC LAMPS | | | | | | | | | |
| HEATERS | | | | | | | | | |

| 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 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 | .075 | 19 | .042 | 90 | 94 | 160 | V.I.R. | Lead covered & armoured. |
| 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 | .003 | 3 | .036 | 8 | 12 | 130 | V.I.R. | Lead covered & armoured. |
| LUB. OIL PURIFIER | 1 | 1 | .0045 | 7 | .029 | 16 | 18 | 80 | do. | do. |
| ROTARY FUEL PUMP | 1 | 1 | .002 | 3 | .029 | 4 | 7.8 | 90 | do. | do. |
| LATHE | 1 | 1 | .0045 | 7 | .029. | 16 | 18 | 120 | do. | do. |
| DRILL | 1 | 1 | .0045 | 7 | .029. | 16 | 18 | 90 | do. | do. |
| GRINDER | 1 | 1 | .010. | 7 | .044. | 24 | 31 | 80. | do. | do. |

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.

For

SWAN, HUNTER, & WIGHAM RICHARDSON, LTD.

Electrical Engineers.

Date

3rd March 1936

COMPASSES.

Distance between electric generators or motors and standard compass

184 ft.

Distance between electric generators or motors and steering compass

190 ft.

The nearest cables to the compasses are as follows:—

A cable carrying .1 Ampères inside feet from standard compass. 6 feet from steering compass.

A cable carrying .1 Ampères 6 feet from standard compass. inside feet from steering compass.

A cable carrying 2 Ampères 8 feet from standard compass. 8 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 all. course in the case of the standard

compass, and nil degrees on all. course in the case of the steering compass.

For

SWAN, HUNTER, & WIGHAM RICHARDSON, LTD.

Wm. Buckle

Builder's Signature.

Date

3/3/36

Is this installation a duplicate of a previous case

Yes

If so, state name of vessel

"Elona"

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

The above instⁿ has been fitted out under special survey. The workmanship & materials used were good. The insulation resistance is good. On completion the dynamo governors, main board, fuses, cables & fittings were examined & tested under working conditions & found satisfactory. This vessel is eligible in my opinion for notation D.F. & E.S.D.

Noted

Mr

10.3.36

Total Capacity of Generators 32 Kilowatts.

The amount of Fee ... £ 23 : 0 :

When applied for,

7 MAR 1936

When received,

12-3-1936 700 13/3

Travelling Expenses (if any) £ :

W.T. Badger

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 13 MAR 1936

Assigned

See Nav. J.E. 93536



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