

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 7.3.36 When handed in at Local Office Newcastle-on-Tyne Port of Newcastle-on-Tyne

No. in Survey held at Newcastle-on-Tyne Date, First Survey 16 Jan. Last Survey 18 Feb 1936  
(Number of Visits 5)

Reg. Book. Subt. 39091 on the M.S. "Mastra" Tons { Gross 6193  
Net 3627

Built at Wallsend-on-Tyne By whom built Swan Hunter & Wigham Richardson Yard No. 1511 When built 1936

Owners Anglo-Bacon Petroleum Co Port belonging to London

Electric Light Installation fitted by Swan 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 - 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 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 - 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

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 yes

accessibility of all parts yes, absence of fuses on back of board yes, temperature rise of omnibus bars yes

individual fuses to voltmeter, pilot or earth lamp yes, are moving parts of switches alive in the "off" position no

are all screws and nuts securing connections effectively locked yes are any fuses fitted on the live side of switches no

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

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 clipped up in accommodation, lead covered & removed in galv. iron pipes under fore safe gangways, lead covered & armoured clipped 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 " " Krombach 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 ...	1	.100	19	.083	100	118	140	do.	do.
Store supply.	1	.004	7	.036	8.8	24	120	do.	do.
Cargo lights.	1	.007	7	.036	4	24	630	do.	do.
Navigation.	1	.075	19	.072	62	94	600	do.	do.
Midship & forward.									
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	190	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.  
*Thon*

Electrical Engineers.

Date *3<sup>rd</sup> 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. Buckie*

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 inst<sup>n</sup> 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* : *7 MAR 1936*

Travelling Expenses (if any) £ : : *12-3-19 34 700 13/3*

*W.T. Badger*

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 13 MAR 1936

Assigned

*See Nav. G.E. 93536*

2m.5.34.—Transfer.  
The Surveyors are requested not to write on or below the space for Committee's Minute.



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