

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 24 JUL 1936

Date of writing Report 27.7.36 When handed in at Local Office 23.7.36 Port of BARROW.

No. in Survey held at BARROW. Date, First Survey 1.8.36 Last Survey 28.7.1936

Reg. Book. 7/121 on the T.S. "AWATEA" (Number of Visits 7)

Built at BARROW By whom VICKERS ARMSTRONGS LTD Yard No. 707 Tons (Gross) 14000

Owners UNION S.S. CO. OF NEW ZEALAND Port belonging to WELLINGTON, N.Z. When built 1936

Electric Light Installation fitted by VICKERS ARMSTRONGS LTD Contract No. 707 When fitted 1936

Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Double 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 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 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 For end of Engine Room, 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 Above main 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 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 ✓

is it of an approved type ✓, 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

Cash Generator:— 2100 S.P.C.B. interlocked with Equalizer Switch. Hand Operated with 0.4% Shunt Trip. S.P. Elec. 4. 2100 S.B. with 0.4% R.C. Shunt Trip.

Outgoing Circuits:— Above 1000:— D.P. hand op. C.B. with 0.4% Shunt Trip. Below 1000:— D.P. Switch + D.P. fuses.

Are turbine driven generators fitted with emergency trip switch as per rule Yes Are cupboards or compartments containing switchboards composed of

fire-resisting material or lined with approved material Yes Instruments on main switchboard 20 Moving Coil Recording ammeters 3

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

Earth 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 "Antic." have the reversed

current protection devices been tested under working conditions Yes. **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, twin & multicore 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 9.2 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 Yes.

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, lavatories, bathrooms and lavatories lead covered or run in conduit Yes & H.R.

Support and Protection of Cables, state how the cables are supported and protected hanging in mast spaces - L.C. & H.C. cables clipped to steel wire cable trays. Acet. - L.C. clipped up. Public Rooms - V.R. in wood casing & conduit. Dr. L.C. & H.R. clipped up.

If cables are run in wood casings, are the casings and caps secured by screws Yes, are the cap screws of brass Yes, are the cables run in separate grooves Yes. 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 made.

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 Brass & Fibre.

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

are their connections made as per Rule Yes.

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 Diesel driven generator connected through C.B. to main supply.

Emergency supply controlled by D.P. switches & fuses. Main supply from main S.B. through C/O switch. In addition an A.C./D.C. motor generator is fitted for use in port.

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 Yes.

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 By a substantial guard.

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 ✓.

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 Yes, are air heaters constructed and fitted as per Rule Yes.

Searchlight Lamps, No. of 1, whether fixed or portable Semi 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 & Vertical, 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 ✓.

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 ✓.

are all fuses of the filled 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 type approved by the Home Office ✓.

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.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	3	450	220	2045	900	Steam Turbine		
AUXILIARY	1	150	220	682	975	A.C. Motor supplied from Chave.		
EMERGENCY	1	84	220	382	575	5 Cyl. Oil Engine.		
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.	Circuit.	Rule.			
MAIN GENERATOR	3	2.55	127	.093	2045	2199	72	V.C.	L.C. A+B.
EQUALISER CONNECTIONS	2	1.7	127	.093			60	V.C.	L.C. A+B.
AUXILIARY GENERATOR	1	.85	127	.093	682	733	50	V.C.	L.C.
EMERGENCY GENERATOR	1	.40	61	.093	382	417	20	V.C.	L.C.
ROTARY TRANSFORMER									
ENGINE ROOM									
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
ACCOMMODATION									
WIRELESS									
SEARCHLIGHT									
MASTHEAD LIGHT									
SIDE LIGHTS									
COMPASS LIGHTS									
POOP LIGHTS									
CARGO LIGHTS									
ARC LAMPS									
HEATERS									

See As Fitted Book 2 Diagrams.

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										
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										

See As Fitted Book 2 Diagrams.

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.

J. as [signature]

Electrical Engineers.

Date 20.7.36

COMPASSES.

Distance between electric generators or motors and standard compass

50 ft. approx (Northward)

Distance between electric generators or motors and steering compass

42 ft. approx

The nearest cables to the compasses are as follows:—

A cable carrying 29.1 Ampères 10 feet from standard compass 1430 feet from steering compass.

A cable carrying 2.4.1 Ampères 10 feet from standard compass 28 feet from steering compass.

A cable carrying 2.0.1 Ampères 88 feet from standard compass 10 feet from steering compass.

Have the compasses been adjusted with and without the electric installation at work at full power

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted

The maximum deviation due to electric currents was found to be degrees on course in the case of the standard compass, and degrees on course in the case of the steering compass.

FOR VICKERS-ARMSTRONGS LIMITED.

J. M. Druskin

SHIPBUILDING MANAGER,

BARROW WORKS.

Builder's Signature.

Date

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, etc.)

This installation has been fitted on board under special survey in accordance with the approved plans. The materials and workmanship have been found to be good and sound.

On the satisfactory completion of the sea trials the installation will, in my opinion, be eligible for Classification.

Notes

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20.7.36

Total Capacity of Generators 1584 Kilowatts.

Baw M 33:17.0

Liv M 33:17.0

The amount of Fee

(See L.A. 102527)

67:14.0

84:11.0

When applied for,

19.

When received,

31.7.19.36

Travelling Expenses (if any) £ 13:11:0

Liv M

R. C. Clayton

Surveyor to Lloyd's Register of Shipping.

Committee's Minute WED. 5 AUG 1936

Assigned

See Baw. 26.26.19

LR-FAF-TB14-250 212

3m 554.—Transfer.
The Signatures are requested not to write on or below the space for Committee's Minute.