

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

OCT -1 1937

Received at London Office

Date of writing Report 19 When handed in at Local Office 30/9/37 Port of NEWCASTLE-ON-TYNE

No. in Survey held at Newcastle. Date, First Survey 20 Aug. Last Survey 20 Sept 1937

Reg. Book. 20517 on the M.V. "Arndale". (Number of Visits... 5) Tons { Gross 8296 Net 4936

Built at Newcastle. By whom built Swan Hunter & W. R. & Co. Ltd Yard No. 1516 When built 1937

Owners The Admiralty. Port belonging to London

Electric Light Installation fitted by Swan Hunter & W. R. & Co. Ltd. Contract No. 1516 When fitted 1937.

Is the Vessel fitted for carrying Petroleum in bulk Yes.

System of Distribution Double wire ✓

Pressure of supply for Lighting 110 volts, Heating 110 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

approved Yes (2 enclosed herewith) ✓ Have certificates of test results for machines under 100 kw. been submitted and approved

Have certificates for generators under 100 kw. been supplied and approved 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 ✓

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 switchboards are 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

materials Yes ✓, 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

Triple pole C.B on main generators. DP S & DP fuses on 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 Instruments on main switchboard 8 ammeters 3

voltmeters synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection

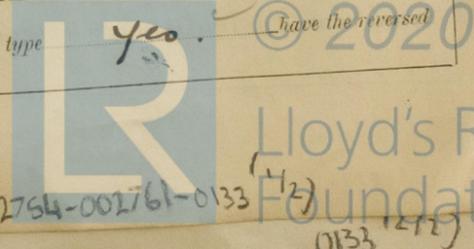
Yes ✓ Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system

E lamps coupled to E through switches of fuses Yes ✓, are the fusible cutouts of an approved type Yes ✓

do these comply with the requirements of the Rules Yes ✓

2 Generator Test Certificate

ENCLOSURE



current protection devices been tested under working conditions Yes are all fuses labelled as per rule 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 are the cables insulated and protected as per Tables IV, V, X, XI, XII or XIII of the Rules Yes

If the cables are insulated otherwise than as per Rule, are they of an approved type Yes **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load 4.5 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 Yes, 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 laid under machines or floorplates no if so, are they adequately protected Yes

Are cables in machinery spaces, galleys, lavatories, bathrooms and lavatories lead covered or run in conduit Yes

Support and Protection of Cables, state how the cables are supported and protected in galv iron pipes along fore cast gangway Yes L.C.A.B in engine room clipped up + L.C.A.B L.C.B in acc

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 lead

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

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 are they ventilated 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 no

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

Special anti-light fit. at galvanised iron pipe run outside pump room how are the cables led midship alleyway

where are the controlling switches situated midship alleyway

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 one whether fixed or portable portable, are their fittings as per Rule Yes

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

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing Yes have certificates for all motors for essential services been supplied and approved Yes

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 Yes

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 filled 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 flameproof type approved for use in dangerous spaces Yes

Spare Gear, if the vessel is for open sea service have spares been supplied as per Rule Yes are they suitably stored in dry situations 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	30	110	273	550	Steam, Diesel		
AUXILIARY	1	8	110	73	750	Steam engine		
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.	Circuits.	Rule.			
MAIN GENERATOR	1	.4	61	.093	273	288	70	V.I.R	L.C.A+B
EQUALISER CONNECTIONS	1	.15	37	.072		162	35	50	50
AUXILIARY GENERATOR	1	.06	19	.064	73	83	40	50	50
EMERGENCY GENERATOR									
ROTARY TRANSFORMER MOTOR GENERATOR									
ENGINE ROOM	1	.04	19	.052	53	64	40	50	50
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
Navigation	1	.01	7	.044	10	31	480	50	50
Accommodation	1	.06	19	.064	45	83	440	50	50
Midship stow	1	.0225	7	.064	31	46	200	50	50
Acc. aft									
WIRELESS	1	.0225	7	.064	15	46	480	50	50
SEARCHLIGHT	1	.04	19	.052	60	64	880	50	50
MASTHEAD LIGHT	1	.002	3	.029	36	7.8	420	50	50
SIDE LIGHTS	1	.002	3	.029	36	7.8	80	50	L.C.A+B
COMPASS LIGHTS	1	.002	3	.029	36	7.8	40	50	50
Star Deck LIGHTS	1	.002	3	.029	36	7.8	440	50	50
CARGO LIGHTS	1	.007	7	.036	3.4	24	420	50	in galv iron pipes
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										
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS										
OIL FUEL TRANSFER PUMP										
WINDLASS										
WINCHES, FORWARD										
Oil Purifiers	2	1	.0045	7	.029	16	18.2	80	V.I.R	L.C.A+B
WINCHES, AFT										
STEERING GEAR										
(a) MOTOR GENERATOR										
(b) MAIN MOTOR										
WORKSHOP MOTOR	1	1	.01	7	.044	24	31	100	50	50
VENTILATING FANS	3	1	.0045	7	.029	10	18.2	100	50	50
" "	1	1	.01	7	.044	10	31	400	50	50
Refrig	1	1	.04	19	.052	64	64	100	50	50
2. D. Fan	1	1	.0145	7	.052	36	37	80	50	50
Crane	1	1	.01	7	.044	24	31	80	50	50
Vapour 800 Fan	1	1	.0045	7	.029	16	18.2	100	50	50
Trimming pump	1	1	.0045	7	.029	12	18.2	100	50	50
Siller pump	1	1	.002	3	.029	4	7.8	100	50	50

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The Electrical Equipment is installed in accordance with the approved plans.

All 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 28 Sept 37.

COMPASSES.

Minimum distance between electric generators or motors and standard compass 210 feet

Minimum distance between electric generators or motors and steering compass 205 feet.

The nearest cables to the compasses are as follows:—

A cable carrying - 1 Ampères on the ~~left~~ standard compass 10 feet from steering compass.

A cable carrying - 1 Ampères 10 feet from standard compass on the ~~right~~ steering compass.

A cable carrying Ampères 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

To be filled in after adjustment of compasses.

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

SWAN, HUNTER, & WIGHAM RICHARDSON, LTD.

W. H. Morrison

Builder's Signature.

Date 29 September 1937.

Is this installation a duplicate of a previous case Yes. If so, state name of vessel h.v. "Abheydale"

General Remarks (State quality of workmanship, opinions as to class, &c. The above instⁿ has been fitted out under special survey. The materials used & workmanship are good. The insulation resistance is good. The dynamos, 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 W.T.B. 6/10/37.

The Surveyors are requested not to write on or below the space for Committee's Minute

Total Capacity of Generators 68 Kilowatts.

The amount of Fee ... £ 29 : 6 :
When applied for, 19
Travelling Expenses (if any) £ : :
When received, 12.10.37 13/11

W.T. Badger,
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI 8 OCT 1937

Assigned

See New No. 95474



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Foundation