

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

DEC 11 1939

Received at London Office.....

Date of writing Report... 23RD NOV. 1939. When handed in at Local Office... 8TH Dec. 1939. Port of... BELFAST.

No. in Survey held at... BELFAST. Date, First Survey... 20th Apr 1939. Last Survey... 26th Nov 1939.
Reg. Book. (Number of Visits... 18.)

36311 on the TWIN SCREW MOTOR VESSEL "WAIOTIRA" Tons { Gross.....
Net.....

Built at... BELFAST. By whom built... HARLAND & WOLFF LTD. Yard No. 1019. When built... 1939.

Owners... SHAW SAVILL & ALBION LTD. Port belonging to... SOUTHAMPTON.

Electrical Installation fitted by... HARLAND & WOLFF LTD. Contract No. 1019. When fitted... 1939.

Is vessel fitted for carrying Petroleum in bulk... NO. Is vessel equipped with D.F. YES. E.S.D. YES. Gy.C. YES. Sub.Sig. =

Have plans been submitted and approved... YES. System of Distribution... TWO WIRE DIRECT CURRENT. Voltage of supply for Lighting... 220.

Heating... 220. Power... 220. Direct or Alternating Current, Lighting... D.C. Power... D.C. If Alternating Current state frequency... = Prime Movers,

has the governing been tested and found efficient when the whole load is suddenly thrown on and off... YES. Are turbine emergency governors fitted with a

trip switch as per Rule... = Generators, are they compound wound... YES, are they level compounded under working conditions... YES,

if not compound wound state distance between generators... = and from switchboard... = Where more than one generator is fitted are they

arranged to run in parallel... YES, are shunt field regulators provided... YES. Is the compound winding connected to the negative or positive pole

POSITIVE. Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing... YES. Have certificates of

test for machines under 100 kw. been supplied... YES and the results found as per rule... YES. Are the lubricating arrangements and the construction

of the generators as per rule... YES. Position of Generators... MAIN GENERATORS IN MOTOR RM. PORT & STARBOARD AUX. GENERATOR IN

ROOM ON SHELTER DECK, is the ventilation in way of generators satisfactory... YES, are they clear of inflammable material... YES, if situated

near unprotected combustible material state distance from same horizontally... = and vertically... =, are the generators protected from mechanical

injury and damage from water, steam and oil... YES, are the bedplates and frames earthed... YES and the prime movers and generators in metallic

contact... YES. Switchboards, where are main switchboards placed... ON PLATFORM AT AFTER END OF MOTOR ROOM

AUXILIARY SWITCHBOARD IN AUXILIARY GENERATOR ROOM SHELTER DECK.

are they in accessible positions, free from inflammable gases and acid fumes... YES, are they protected from mechanical injury and damage from water, steam

and oil... YES, if situated near unprotected combustible material state distance from same horizontally... = and vertically... =, what insulation

material is used for the panels... SINDANYO & SLATE, if of synthetic insulating material is it an Approved Type... YES, if of

semi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule... YES. Is the frame effectually earthed... YES

Is the construction as per Rule... YES, including accessibility of parts... YES, absence of fuses on the back of the board... YES, individual fuses

to pilot and earth lamps, volimeters, etc.,... YES locking of screws and nuts... YES, labelling of apparatus and fuses... YES, fuses on the "dead"

side of switches... YES. Description of Main Switchgear for each generator and arrangement of equaliser switches... D.P. O.L. REVERSE CURRENT

CIRCUIT BREAKERS WITH TIME LIMITS & M.B.O. ALSO TRIPLE POLE SWITCHES.

and for each outgoing circuit... EITHER D.P. O.L. CIRCUIT BREAKERS WITH TIME LIMITS OR SHUNT TRIP OR D.P.Q.B. KNIFE

SWITCHES & FUSES ON BOTH POLES.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule... YES. Instruments on main switchboard... 4

ammeters... 2 volimeters... 4 synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the

equaliser connection... YES. Earth Testing, state means provided... BY "EARTH INDICATING" LAMPS.

Switches, Circuit Breakers and Fuses, are they as per Rule **YES**, are the fuses an approved type **YES**, are all fuses labelled as per Rule **YES**, are the reversed current protection devices connected on the pole opposite to the equaliser connection **YES**, have they been tested under working conditions **YES**. Joint Boxes, Section Boards and Distribution Boards, is the construction and position as per Rule **YES**. Cables, are they insulated and protected as per the appropriate Tables of the Rules **YES**, if otherwise than as per Rule are they of an approved type **-**, state maximum fall of pressure between bus bars and any point under maximum load **7FW.PUMP**, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets **YES**. Are paper insulated and varnished cambric insulated cables sealed at the exposed ends **-** with insulating compound **-** or waterproof insulating tape **-**. Are all the cable runs in accessible positions, not exposed to drip or accumulation of water or oil, high temperatures or risk of mechanical damage **YES**, are cables laid under machines or floorplates **YES**, if so, are they adequately protected **YES**. Are cables in machinery spaces, galleys, laundries, etc., lead covered **H.R.** or run in conduit **IN LAMP & PAINT RMS.** State how the cables are supported and protected **ON PERFORATED OR SOLID PROTECTED PLATING & WOOD CASING.**

Are all lead sheaths, armouring and conduits effectually bonded and earthed **YES**. Refrigerated chambers, are the cables and fittings as per Rule **YES**. Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands **YES**, where unarmoured cables pass through beams, etc., are the holes effectually bushed **YES** and with what material **LEAD**. Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule **YES**. Emergency Supply, state position **AUXY. GENERATOR ROOM ON SHELTER DECK.** and method of control **BY SWITCHBOARD IN AUXY. GENERATOR ROOM**.

Navigation Lamps, are they separately wired **YES** controlled by separate double pole switches **YES** and fuses **YES**. Are the switches and fuses in a position accessible only to the officers on watch **YES**, is an automatic indicator fitted **YES**. Secondary Batteries, are they constructed and fitted as per Rule **YES**, are they adequately ventilated **YES**. Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof **YES**. Are fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present **YES**, if so, how are they protected **-**.

GASTIGHT GUARDED PENDANTS IN LAMP & PAINT ROOMS

and where are the controlling switches fitted **LOCALLY**, are all fittings suitably ventilated **YES**, are all fittings and accessories constructed and installed as per Rule **YES**. Searchlight Lamps, No. of **1**, whether fixed or portable **PORTABLE**, are their fittings as per Rule **-**. Heating and Cooking, is the general construction as per Rule **YES**.

are the frames effectually earthed **YES**, are heaters in the accommodation of the convection type **YES**. Motors, are all motors constructed and installed as per Rule **YES** and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water, steam and oil **YES**, if situated near unprotected combustible material state minimum distance from same horizontally **-** and vertically **-**.

Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing **YES**. Have certificates of test for motors under 100 BHP intended for essential services been supplied and the results found as per Rule **YES**. Control Gear and Resistances, are they constructed and fitted as per Rule **YES**.

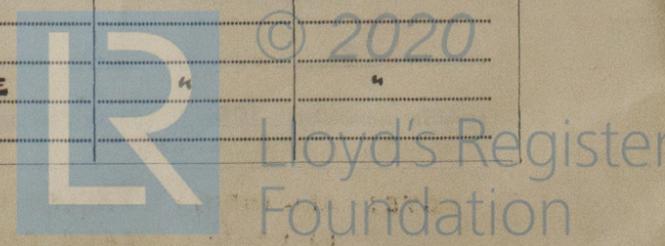
Lightning Conductors, where required are they fitted as per Rule **-**. Ships carrying Oil having a Flash Point less than 150° F. Have all the special requirements of the Rules for such ships been complied with **-**, are all fuses of the cartridge type **-**.

are they of an approved type **-**. If portable lamps for use in dangerous spaces are supplied, are they of a self-contained battery-fed flameproof type **-**. Spare Gear, if the vessel is for open sea service have spares been provided as per Rule **YES**, are they suitably stored in dry situations **YES**.

Insulation Tests, has the insulation resistance of all circuits and apparatus been megger tested and found satisfactory **YES**.

PARTICULARS OF GENERATING PLANT.

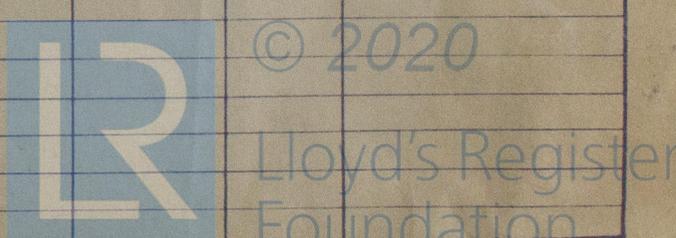
DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN ...	4	300	222	1350	340	6 CYL. DIESEL ENGINE	DIESEL OIL	Above 150° F
AUXILIARY EMERGENCY ...	1	25	220	114	775	3 CYL. DIESEL ENGINE	"	"
ROTARY TRANSFORMER								



MOTOR CONDUCTORS (CONTINUED)

DEC 11 1949

DESCRIPTION	B.H.P.	NO. OF MOTORS	CONDUCTORS		COMPOSITION OF STRAND		TOTAL MAXIMUM CURRENT AMPS.		APPROXIMATE LENGTH LEAD RETURN FEET	INSULATED WITH	HOW PROTECTED	
			NO. PER POLE	TOTAL EFFECT AREA PER POLE SQ. INS.	NO.	DIA.	IN CIRCUIT	RULE				
C.O ₂ MACHINES	160	3	1	1.0000	127	.103	595.0	595	150	RUBBER	HARD RUBBER	
BRINE PUMPS	16	4	1	0.0400	19	.052	62.0	64	108	RUBBER	HARD RUBBER	
BRINE PUMP	3	1	1	0.0045	7	.029	13.0	18.2	130	RUBBER	HARD RUBBER	
PLUNGER BRINE PUMP	3 3/4	1	1	0.0045	7	.029	15.8	18.2	126	RUBBER	HARD RUBBER	
REFRIG. EXH. FAN.	3/4	1	1	0.0020	3	.029	4.0	7.4	20	RUBBER	HARD RUBBER	
20" DIA. REFRIG. FANS	2 3/4	11	1	0.0045	7	.029	11.5	18.2	270	RUBBER	HARD RUBBER	
25" DIA. REFRIG. FANS	3 3/4	6	1	0.0045	7	.029	15.5	18.2	270	RUBBER	HARD RUBBER	
30" DIA. REFRIG. FANS	6 1/2	7	1	0.0100	7	.044	28.0	31	130	RUBBER	HARD RUBBER	
35" DIA. REFRIG. FANS	8	4	1	0.0145	7	.052	32.0	37	140	RUBBER	HARD RUBBER	
15" DIA. REFRIG. FANS	1 1/2	3	1	0.0030	3	.036	7.5	12	150	RUBBER	HARD RUBBER	
C.O ₂ RECORDER		1	1	0.0020	3	.029	2.0	7.4	30	RUBBER	HARD RUBBER	
WINDLASS	77	1	1	0.4000	61	.093	293.0	452	290 100 130 100 230	RUBBER	HARD RUBBER	
WINCHES FORW.	57	8	1	0.2000	37	.083	222.0	247				
WINCHES MIDSHIP	57	3	1	0.2000	37	.083	222.0	247				
WINCHES AFT.	57	9	1	0.2000	37	.083	222.0	247				
STEERING GEAR	60	2	1	0.3000	37	.103	230.0	240				
HALL MARK MACHINE	1	1	1	0.0020	3	.029	4.0	7.4	100	RUBBER	HARD RUBBER	



W1139-0154

GENERATOR CABLES.

DESCRIPTION.	KILOWATTS.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
		No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
MAIN GENERATOR	300	3	91/103	1350	1383 ✓	68	RUBBER	HARD RUBBER & BRAIDING
" " EQUALISER		2	91/103	-	922 ✓	68	RUBBER	HARD RUBBER & BRAIDING
AUXILIARY EMERGENCY GENERATOR	25	1	19/083	114	118 ✓	45	RUBBER	HARD RUBBER & BRAIDING
ROTARY TRANSFORMER: MOTOR								
" " GENERATOR								

MAIN DISTRIBUTION CABLES.

AUX. SWITCHBOARDS AND SECTION BOARDS								
AUX. SWITCHBOARD		2	37/083	270	368 ✓	233	RUBBER	HARD RUBBER & BRAIDING
MASTERBOARD "A"	COOKING	1	19/064	36.6	63 ✓	570	RUBBER	HARD RUBBER
	HEATING	1	61/093	272.5	288 ✓	450	RUBBER	HARD RUBBER
	LIGHTING	1	19/044	44.1	53 ✓	150	RUBBER	HARD RUBBER
	COOKING	1	19/064	40.5	63 ✓	450	RUBBER	HARD RUBBER
MASTERBOARD "B"	HEATING	1	37/083	154.7	184 ✓	270	RUBBER	HARD RUBBER
	LIGHTING	1	7/064	37.7	46 ✓	75	RUBBER	HARD RUBBER
MASTERBOARD "C" WINCHES		2	61/093	370	376 ✓	270	RUBBER	HARD RUBBER
MASTERBOARD "D" WINCHES		1	61/093	293	288 ✓	675	RUBBER	HARD RUBBER
MASTERBOARD "E" WINCHES		2	37/103	296	480 ✓	600	RUBBER	HARD RUBBER
MASTERBOARD "F" & "H"	HEATING	1	37/093	212	214 ✓	420	RUBBER	HARD RUBBER
	WINCHES	3	61/103	666	996 ✓	370	RUBBER	HARD RUBBER
MASTERBOARD "G"	CO ₂ MACHINES	3	127/103	1785	1785 ✓	170	RUBBER	HARD RUBBER
	REFRIG. AUXILIARIES	2	91/103	864	922 ✓	180	RUBBER	HARD RUBBER

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS		1	7/044	15	31 ✓	600	RUBBER	HARD RUBBER & BRAIDING
NAVIGATION LIGHTS								
LIGHTING AND HEATING								
MASTHEAD LIGHT		1	3/029	0.18	7.8 ✓	550	RUBBER	L.S.A.B. UP MAST
SIDE LIGHTS		1	3/029	0.27	7.8 ✓	80	RUBBER	LEAD COVERED
COMPASS LIGHTS		1	3/029	0.18	7.8 ✓	24	RUBBER	LEAD COVERED
CARGO LIGHTING FORD.		1	7/052	16	37 ✓	530	RUBBER	HARD RUBBER
CARGO LIGHTING MIDSHIP		1	7/036	14	24 ✓	72	RUBBER	HARD RUBBER
CARGO LIGHTING AFT		1	7/064	16	46 ✓	510	RUBBER	HARD RUBBER
600 WATT. 750 WATT. 1000 WATT. & 1500 WATT. HEATERS		1	3/029	2.7/6.8	7.8 ✓	VARIOUS	RUBBER	HARD RUBBER OR LEAD COVERED.
2000 WATT. & 2500 WATT. HEATERS.		1	3/036	2.1/11.3	12 ✓	"	RUBBER	HARD RUBBER OR LEAD COVERED.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.						
BILGE PUMPS PORT & STARBOARD	2	13.0	1	19/052	51.0	64 ✓	270	RUBBER HARD RUBBER & BRAIDING
MANOEUVRING AIR COMPRS.	2	100.0	1	91/093	380.0	384 ✓	324	RUBBER HARD RUBBER
MAIN F.W. PUMPS	2	26.0	1	19/083	100.0	118 ✓	330	RUBBER HARD RUBBER
MAIN S.W. PUMPS	3	36.0	1	37/072	137.0	158 ✓	330	RUBBER HARD RUBBER
SANITARY PUMP	1	22.0	1	19/072	86.0	97 ✓	340	RUBBER HARD RUBBER
GENERAL SERVICE PUMP	1	24.0	1	19/072	93.0	97 ✓	336	RUBBER HARD RUBBER
LUB. OIL PUMPS	3	86.0	1	61/103	323.0	332 ✓	216	RUBBER HARD RUBBER
TURNING GEAR MOTORS	2	15.0	1	19/052	58.5	64 ✓	156	RUBBER HARD RUBBER
FUEL OIL TRANSFER PUMPS	2	12.0	1	19/044	47.0	53 ✓	270	RUBBER HARD RUBBER
BALLAST PUMP	1	26.0	1	19/083	100.0	118 ✓	345	RUBBER HARD RUBBER
REFRIG. SW. CIRC. PUMPS	2	26.0	1	19/083	100.0	118 ✓	405	RUBBER HARD RUBBER
MOTOR RM. VENT FANS	5	1.75	1	7/029	8.0	18.2 ✓	285	RUBBER HARD RUBBER
ENG ^{RS} WORKSHOP VENT FAN 17 3/4 DIA.	1	1.0	1	3/036	5.0	12 ✓	279	RUBBER HARD RUBBER
REFRIG. RM. VENT FAN	1	2.0	1	3/036	9.0	12 ✓	180	RUBBER HARD RUBBER
VAPOUR EXTRACTION FANS 12 1/2 DIA.	2	4.5	1	7/036	19.0	24 ✓	264	RUBBER HARD RUBBER
6 TON HOISTS MOTOR RM.	2	5.0	1	7/044	20.0	31 ✓	65	RUBBER HARD RUBBER
9 1/2 LATHE WORKSHOP	1	5.0	1	7/036	20.0	24 ✓	60	RUBBER HARD RUBBER
6 1/2 LATHE WORKSHOP	1	2.0	1	3/036	9.0	12 ✓	40	RUBBER HARD RUBBER
DRILLING MACHINE WORKSHOP	1	2.0	1	3/036	9.0	12 ✓	20	RUBBER HARD RUBBER
GRINDING MACHINE WORKSHOP	1	2.0	1	3/036	9.0	12 ✓	50	RUBBER HARD RUBBER
PURIFIED F.O. PUMPS	2	1.75	1	7/029	8.0	18.2 ✓	85	RUBBER HARD RUBBER
F.O. PURIFIERS	3	2.5	1	7/029	11.0	18.2 ✓	80	RUBBER HARD RUBBER
L.O. PURIFIER	1	2.5	1	7/029	11.0	18.2 ✓	88	RUBBER HARD RUBBER
AUX. F.W. CIRC. PUMP	1	5.0	1	7/036	21.0	24 ✓	60	RUBBER HARD RUBBER
AUX. S.W. CIRC. PUMP	1	8.0	1	7/052	32.5	37 ✓	60	RUBBER HARD RUBBER
MALONE PNEUMERCATOR COMPRESSOR	1		1	3/029	4.0	7.8 ✓	30	RUBBER HARD RUBBER
F.W. PUMP	1	7.0	1	7/044	28.0	31 ✓	240	RUBBER HARD RUBBER
BOILER BLOWER	1	2.0	1	3/036	9.0	12 ✓	66	RUBBER HARD RUBBER
BOILER FEED PUMP	1	2.5	1	7/029	10.6	18.2 ✓	240	RUBBER HARD RUBBER
GALLEY RANGE BLOWERS	2	0.3	1	3/029	2.0	7.8 ✓	165	RUBBER HARD RUBBER

NOTE:- ALL WIRING & CABLES IN THE VICINITY OF THE WHEEL HOUSE & WIRELESS ROOM IN LEAD COVERED CABLES.



The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.
 All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.
 The foregoing is a correct description.



Electrical Engineers. Date.....

COMPASSES.

Minimum distance between electric generators or motors and standard compass..... 25 FEET TO 6YRD MOTOR-GENERATOR

Minimum distance between electric generators or motors and steering compass..... 22 FEET TO 6YRD MOTOR-GENERATOR

The nearest cables to the compasses are as follows:—

A cable carrying 13 Ampères feet from standard compass feet from steering compass.

A cable carrying 0.18 Ampères feet from standard compass ~~feet from~~ steering compass.

A cable carrying 0.18 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

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.



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, whether insulation tests, etc., have been made, opinions as to class, etc.) The electrical equipment of this vessel has been fitted on board under special survey, in accordance with the approved plans, tested under full working conditions and found satisfactory. The materials and workmanship are good.

Noted
J.Y.
11/12/39

Total Capacity of Generators..... 1225 Kilowatts.

The amount of Fee £ 75 : 12 : 6
 { 1/2 due Belfast - £ 37 : 16 : 3 }
 { 1/2 due Liverpool - £ 37 : 16 : 3 }
 Travelling Expenses (if any) £ : :
 When applied for, 8/12/39
 When received, 16/1/40

H. Haffner *Edwin O'Hara*
 Surveyors to Lloyd's Register of Shipping.

Committee's Minute TUE 12 DEC 1939

Assigned..... See Rel. 12500

2in. 10.38.—Transfer. (MADE IN ENGLAND.) (The Surveyors are requested not to write on or below the space for Committee's Minutes.)



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