

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office.....

Date of writing Report. 21-12-44 When handed in at Local Office.....19... Port of Middlesbrough

No. in Survey held at Harwin Hill on Tees Date, First Survey 26-9-44 Last Survey 8-12-1944
Reg. Book. on the S/S "WAVE EMPEROR" Tons {Gross 8196
Net 4566

Built at Harwin Hill on Tees By whom built Furness Shipbuilding Co Ltd Yard No. 361 When built 1944
Owners Admiralty Port belonging to London

Electrical Installation fitted by Furness Shipbuilding Co Ltd Contract No. 361 When fitted 1944

Is vessel fitted for carrying Petroleum in bulk yes Is vessel equipped with D.F. yes E.S.D. yes Gy.C. yes Sub.Sig. No.

Have plans been submitted and approved yes System of Distribution two-wire insulated Voltage of supply for Lighting 110
Heating — Power 110 Direct or Alternating Current, Lighting yes Power yes If Alternating Current state periodicity — Prime Movers, Frms

has the governing been tested and found as per Rule when full 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 No, are shunt field regulators provided yes Is the compound winding connected to the negative or positive pole negative

Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing — 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 on generator platform aft of L.P. Boilers

is the ventilation in way of generators satisfactory yes are they clear of inflammable material —, 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 generator platform adjacent to generators

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 Flony "Sindacup", 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 — 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, voltmeters, 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 a double-pole single throw quick-break knife switch & double-pole cartridge type fuse. A double-pole double-throw knife switch for supplying D.C. from either generator.

and for each outgoing circuit a double-pole, double-throw quick-break knife switch and double pole cartridge type fuse.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule yes Instruments on main switchboard two ammeters two voltmeters — synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the equaliser connection — Earth Testing, state means provided E. lamps connected to E through fuses & fuses.

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 If circuit breakers are provided for the generators, at what overload current did they open when tested —, are the reversed current protection devices connected on the pole opposite to the equaliser connection —, have they been tested under working conditions, and at what current did they operate — 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 less than 1/2 are the ends of all cables having a sectional area of 0.01 square inch and above provided with soldering sockets yes Are paper insulated and varnished cambric insulated cables sealed at the ends yes



with insulating compound yes or waterproof insulating tape. Plastic Compound - Dinitates leaving Are all the cable fits 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. no, if so, are they adequately protected. no. Are cables in machinery spaces, galleys, laundries, etc., lead covered. yes or run in conduit. no. State how the cables are supported and protected. In machinery spaces, along deck runways etc. V.C.L.C.A.B cables clipped to metal tonguing fastened to the surface. In accommodation V.C.L.C. cables clipped to the surface & protected as required by metal guards.

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. Battery - led emergency lanterns fitted. and method of control. switches on the fittings

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. no, are they adequately ventilated. no what is the battery capacity in ampere hours. no

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. D.S.

"Disiprom" flameproof lighting fittings as approved installed in centricastle and where are the controlling switches fitted. in officers' accommodation, are all fittings suitably ventilated. yes, are all fittings and accessories constructed and installed as per Rule. yes. Searchlight Lamps, No. of no, whether fixed or portable. no, are their fittings as per Rule. no. Heating and Cooking, is the general construction as per Rule. no, are the frames effectually earthed. no, are heaters in the accommodation of the convection type. no. 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. no and vertically. no. Are motors coupled to oil fuel transfer and unit pressure pumps capable of being stopped from a position accessible in the event of fire in the pump compartment. no

Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing. no. Have certificates of test for motors under 100 BHP intended for essential services been supplied and the results found as per Rule. no. Control Gear and Resistances, are they constructed and fitted as per Rule. yes. Lightning Conductors, where required are they fitted as per Rule. no. 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. yes. Are all fuses of the cartridge type. yes. Are they of an approved type. yes. Are the fittings for pump rooms, 'ween deck spaces, etc., in accordance with the special requirements for such ships. yes. Are the cables lead covered as per Rule. yes. 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 tested and found satisfactory. yes.

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT			Revs. per Min.	DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.			Fuel Used.	Flash Point of Fuel.
MAIN	2	30 each	110	273	685	Single Cylinder Vertical Steam Engines		
EMERGENCY								
ROTARY TRANSFORMER								

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	No. 1. 30	1	37.083	273	296	60	U.C.	L.C.A.B.
" " <u>Redundant</u>	No. 2. 30	1	37.083	273	296	180	"	"
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
GENERATOR								

MAIN DISTRIBUTION CABLES.

DESCRIPTION.	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.			
AUX. SWITCHBOARDS AND SECTION BOARDS							
Engine Room Machinery SB.	1	7/0.64	54	75	180	U.C.	L.C.A.B.
Wash Room Off. SB.	1	7/0.64	35	75	140	"	"
Deck Machinery Midships - Main	1	37.083	105	296	640	"	"
" " " Emergency	1	37.083	105	296	770	"	"
Store Connection	1	7/0.64	32	57	120	"	"
Boat Hatch SB. R/C	1	7/0.64	32	57	120	"	"

LIGHTING AND HEATING, ETC., CABLES.

DESCRIPTION.	No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.	APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
WIRELESS (off deck, kind of board)	1	7/0.64	50	75	160	U.C.	L.C.
NAVIGATION LIGHTS - Main	1	7/0.64	22	42	140	"	"
LIGHTING AND HEATING - Emergency	1	7/0.64	22	42	160	"	" (C.O.S. - Charted)
Eng. Room Tlg. DB. "E"	1	7/0.44	25	42	200	"	L.C.A.B.
" " " "F"	1	7/0.44	22	42	140	"	"
off. Wash Room "C"	1	7/0.29	2	15	120	"	"
off. Kitchen Tlg. DB. "A"	1	7/0.52	33	57	140	"	"
" " " "B"	1	7/0.52	32	57	130	"	"
Midship Tlg. DB. "H" (off deck, kind of board)	1	7/0.44	10	42	180	"	L.C.
Food " " " "J"	1	7/0.44	5	42	320	"	L.C.A.B.
Pump Room " " " "K"							
Midship Wash Room " " " "L"							
Forward " " " "M"							
Off. Wash Room Tlg. " " " "N"							
Deck Standing Circuit " " " "O"	1	7/0.36	10	25	180	U.C.	L.C.
Wash Room " " " "P"	1	7/0.44	15	42	60	"	"
Rudder " " " "Q"	1	7/0.44	27	42	130	"	"

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.	No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.	APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
Wash Room P. (off Main SB)	1	3	1	7/0.44	20	42	310	U.C.	L.C.A.B.
" " " "S"	1	3	1	7/0.44	20	42	370	"	"
Wash Room P. " " " "T"	1	5	1	7/0.64	5	10	85	"	"
" " " " " "U"	1	5	1	7/0.64	5	10	85	"	"
Forward Yeast	1	8	1	7/0.64	61	75	330	"	"
Wash Room P. (off Main SB)	1	3 1/2	1	7/0.44	27	42	210	"	L.C.
" " " " " "V"	1	4 1/2	1	7/0.64	36	42	130	"	"
Frig. Com. Pump (off Main SB)	1	1	1	7/0.29	7	15	140	"	L.C.A.B.
Midship Wash Room (off Main SB)	1	4.9	1	7/0.64	35	42	240	"	L.C.
Wash Room Motor	1	3	1	7/0.44	21	42	20	"	L.C.A.B.
Boat Hatch P. Fuel	1	2	1	7/0.36	16	25	160	"	L.C.
" " " " " "W"	1	2	1	7/0.36	16	25	180	"	L.C.
" " " " " "X"	1	2	1	7/0.36	16	25	300	"	L.C.

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.

FURNESS SHIPBUILDING CO. LIMITED

Whogley

Electrical Engineer

Date 3.1.45

COMPASSES.

Minimum distance between electric generators or motors and standard compass 15'

Minimum distance between electric generators or motors and steering compass 13'

The nearest cables to the compasses are as follows:—

A cable carrying 1/4 Ampères 7 feet from standard compass on the feet from steering compass.

A cable carrying 1/4 Ampères on the feet from standard compass 7 feet from 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

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 every course in the case of the standard compass, and Nil degrees on every course in the case of the steering compass.

Geo. M. Robertson

Builder's Signature.

Date 5-1-45

Is this installation a duplicate of a previous case No. If so, state name of vessel —

Plans. Are approved plans forwarded herewith No. If not, state date of approval 23-7-44

Certificates. Are certificates of test for motors engaged on essential services and generators forwarded herewith Yes.

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 installed under special survey in accordance with the approved plans, specification, & amendments thereto. The materials used are of good quality and design and the workmanship is good. Upon completion the equipment was operated on load with satisfactory results and the insulation resistance of each circuit was measured and found good. This equipment is in my opinion suitable for a classed vessel.

Noted

HR

19.1.45

Total Capacity of Generators (2x30) 60 Kilowatts.

The amount of Fee ...	£28. 10. 0.	When applied for,
Specification	7. 2. 6.	1. 1. 19.4.45
Travelling Expenses (if any) £	:	When received,
		19.....

B. D. Ward
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI, 26 JAN 1945

Assigned Su F.E. machy. rph.

5m.4.58.—Transfer. (MADE AND PRINTED IN ENGLAND.)

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



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