

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office.....

Date of writing Report... 23 Sept. 43. When handed in at Local Office... 12. 10. 43. Port of... Glasgow.

No. in Survey held at... Glasgow. Date, First Survey... 23 July 43. Last Survey... 4 Oct. 1943.

Reg. Book. 37282. on the "EMPIRE MACKAY" (Number of Visits... 20.)

Built at... Glasgow. By whom built... Messrs. Harland & Wolff Ltd. Yard No. 1167. Tons { Gross 8908 Net 5658. When built... 1943.

Owners... M.O.W.T. (Ing. British Tankers Ltd) Port belonging to... Glasgow.

Electrical Installation fitted by... Messrs Harland & Wolff Ltd. Contract No. 1167. When fitted... 1943.

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. No.

Have plans been submitted and approved... Yes. System of Distribution... two wire. Voltage of supply for Lighting... 110.

Heating... 110. Power... 110. Direct or Alternating Current, Lighting... D.C. Power... D.C. If Alternating Current state periodicity... Prime Movers,

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... Yes, 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... in engine room.

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... near 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... Sindanyo, 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... T. P. circuit breaker fitted with overload and reverse current trips.

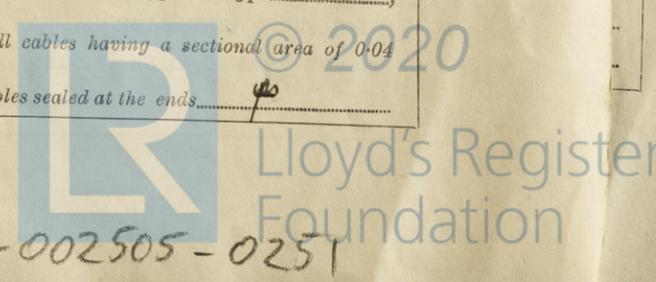
and for each outgoing circuit... D.P. switch and fuses.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule... Yes. Instruments on main switchboard... 3 ammeters... 3 voltmeters... 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... earth 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. If circuit breakers are provided for the generators, at what overload current did they open when tested... 25% O.L., are the reversed current protection devices connected on the pole opposite to the equaliser connection... Yes, have they been tested under working conditions, and at what current did they operate... 15% F.L.

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... if otherwise than as per Rule are they of an approved type... W.E., state maximum fall of pressure between bus bars and any point under maximum load... 4 Volts, 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 ends... Yes.



with insulating compound or waterproof insulating tape yes. 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 yes or run in conduit. State how the cables are supported and protected L.C. or LCAB. clipped.

Are all lead sheaths, armouring and conduits effectually bonded and earthed yes. Refrigerated chambers, are the cables and fittings as per Rule. 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 effectively 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) and method of control. 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, are they adequately ventilated. Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weather proof 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 A.P. magazine fittings and where are the controlling switches fitted outside space, are all fittings suitably ventilated yes, are all fittings and accessories constructed and installed as per Rule yes. Searchlight Lamps, No. of, whether fixed or portable, are their fittings as per Rule. Heating and Cooking, is the general construction as per Rule. Are the frames effectually earthed, are heaters in the accommodation of the convection type. 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. 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. Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing. Have certificates of test for motors under 100 BHP intended for essential services been supplied and the results found as per Rule. 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. Are the fittings for pump rooms, tween deck spaces, etc., in accordance with the special requirements for such ships. Are the cables lead covered as per Rule. 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				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	30	110	273	550	steam engine.		
*	1	35	110	318	550	* supplied and tested by the Admiralty		
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 For Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
MAIN GENERATOR	30	1	81/093	273	288	60	Rubber	LCAB
EQUALISER		1	37/072	-	152	30	"	"
Admiralty generator	35	1	61/103	318	540	48	VC	"
" equaliser.		1	37/083	-	184	24	Rubber	"
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 For Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
AUX. SWITCHBOARDS AND SECTION BOARDS							
Vent fans aft.	1	19/083	96	118	60	Rubber	LCAB
Engine Room Light.	1	19/072	77	97	30	"	"
Sub Switchboard	1	19/083	100	118	600	"	"
Highly masterboard	1	37/072	130	246	600	VC	"
Vent fans fwd.	1	19/083	100	191	600	"	"
Oil Heater:							
A.C. Water	1	7/044	25	42	300	"	"
Oil Heater fwd. from generator	1	7/044	25	42	270	VC	"
	1	7/044	24	42	150	"	LC

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	19/052	25	64	660	Rubber	LCAB.
NAVIGATION LIGHTS	1	7/064	20	46	660	"	"
LIGHTING AND HEATING AFT.	1	19/052	45	64	120	"	"
" ER & BR.	1	7/064	20	46	60	"	"
" Deck Light.	1	7/064	10	46	120	"	"
Suez Canal Propeller (wiring only)	1	19/052	-	64	180	"	"
D.C. Installation.	1	37/072	115	246	30	VC	"
R.D.F. main Supply.	1	7/064	25	75	720	"	"
R.D.F. Alternative.	1	7/064	25	75	660	"	"
Officer Accom. I	1	7/044	28	31	6	Rubber	LC
Officer Accom. II	1	7/044	24	31	6	"	"
W.T. Alternative supply.	1	7/064	25	46	135	"	"
Focal & magazine light.	1	7/052	15	37	300	"	LCAB
Central Cable Lighting	1	3/036	5	10	6	"	LC
Pump Room Lighting	1	7/029	3	15	6	"	"
Hand lamp lighting	1	7/044	19	42	60	VC	"
Deck Lighting	1	7/036	19	42	18	VC	"
NAVIGATION ALTERNATIVE SUPPLY	1	7/064	20	46	180	Rubber	"

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.						
American Gear Air Compressor	1	12	1	19/072	97	157	105	VC. LCAB.
10" Sq. Roper	1	-	1	7/044	18	42	195	LC
Eyes Churn	1	-	1	7/036	20	28	90	"
Admiralty W/T diff.	1	-	1	19/052	27	104	132	"
Ammunition Hoist.	1	3 1/2	1	19/052	28	104	300	LCAB
RR VENT FANS.	2	4	1	7/052	34	57	145	"

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.

FOR HARLAND AND WOLFF LIMITED

R. Reelen
Govan Secretary

Electrical Engineers.

Date 11 Oct 43

COMPASSES.

Minimum distance between electric generators or motors and standard compass 30 feet

Minimum distance between electric generators or motors and steering compass 25 feet

The nearest cables to the compasses are as follows:—

A cable carrying 2 Ampères led into feet from standard compass led into feet from steering compass.

A cable carrying 20 Ampères 4'6" feet from standard compass 4'6" 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 any course in the case of the standard compass, and nil degrees on any course in the case of the steering compass.

FOR HARLAND AND WOLFF LIMITED

R. Reelen
Govan Secretary

Builder's Signature.

Date 11 Oct 43

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 20-2-42

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 fitted on board under special survey, tested under full working conditions and found satisfactory. The materials and workmanship are good. That portion of the installation required for Admiralty purposes has been installed under Admiralty Supervision only.

11/10
12-10-43

Total Capacity of Generators 95 Kilowatts.

The amount of Fee £ 32. - - When applied for 12 OCT 1943

Travelling Expenses (if any) £ - - - When received.

R. Kuschman

Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 12 OCT 1943

Assigned

5m. 4. 38. - 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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