

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL) TUE. 9 OCT. 1923
Received at London Office

Date of writing Report

When handed in at Local Office

Port of Belfast

No. in Survey held at Belfast
Reg. Book.

Date, First Survey Apr 13, Last Survey Sep 21 1923

(Number of Visits... 13...)

on the New Steel Y.S.S. "Mooltan"

Tons { Gross
Net

Built at Belfast

By whom built Harland & Wolff Ltd Yard No. 584

When built 1923

Owners Oriental Steam Navigation Co Port belonging to Belfast

Electric Light Installation fitted by Harland & Wolff Ltd Contract No. 584 When fitted 1923

Dynamo, Switchboard & Motors supplied by the General Electric Co (England)

System of Distribution Double Wire, Distribution and Subdistribution System.

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 overload 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

Are all terminals accessible and clearly marked Yes, are they so spaced or shielded that they cannot be accidentally earthed, or short circuited

Position of Generators Emergency Generator in the Emergency Dynamo House on Prom. Deck. Main Generators in Elec. Machinery Recess, above the Thrust Recess Are the lubricating arrangements of the generators as per Rule Yes, 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 Yes, are the generators protected from mechanical injury and damage from water, steam or oil Yes

are their axis 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 In Elec. Machinery Recess, above Thrust Recess. Emergency Switchboard in the Emergency Dynamo House, Prom. Deck. 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

are they constructed wholly of durable, incombustible non-absorbent materials Yes, is all insulation of high dielectric strength and of permanently high insulation resistance Yes

if semi-insulating material is used, are all conducting parts connected to one pole insulated from the slab with mica or micanite and the slab similarly insulated from its framework Yes

frame effectively earthed Yes Are the following fittings as per Rule, viz.:— spacing or shielding of live parts

Yes, accessibility of all parts Yes, absence of fuses on back of board Yes, proportion of omnibus bars Yes

Yes, individual fuses to voltmeter, pilot or earth lamp Yes, connections of switches Yes

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches The Switchgear of each Generator consists of a 1000 Amp. T.P. Switch (Equal. blade closing before and opening after Main.) and a 700 Amp. D.P. Circuit Breaker, Max. and Ber. with Time Lag. The Outgoing Circuits of 200 Amps. and over have each a D.P. C.O. Switch & D.P. Circuit Breaker. The smaller circuits have a D.P. Switch & D.P. Fuse, 3-500 Amp. Circuits have D.P. Circuit Breakers (Max.) only

Instruments on main switchboard 7 ammeters & 2 voltmeters arranged for paralleling purposes.

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

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules Yes

Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule Yes

Insulation of Cables, state type of cables, single or twin *Single* are the cables insulated and protected as per Tables III or IV of the Rules. *Yes*

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load *10 Volts*

Cable Sockets and other connections, are the ends of all cables having a sectional area of 0.007 square inch and above provided with soldering sockets *Yes*

Paper Insulated Cables, If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound

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*

Support and Protection of Cables, state how the cables are supported and protected *Clipped to Perforated Steel Plating, Protected by Lead covering, or lead covering sewed, Steel-armoured & braided cable.*
If cables are run in wood casings, are the casings and caps secured by screws _____, are the cap screws of brass _____, are the cables run in separate grooves _____, If armoured and lead covered cables are secured by metal clips, are the clips used as per Table VI _____

Refrigerated Chambers, if lights are fitted, are the cables and fittings in accordance with the special requirements *Yes*

Joints in Cables, state if any, and how made, insulated, and protected _____

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 Positions, 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 *All electric fittings, sockets etc. fixed other than to Steel-work of the ship are provided with earthing connections equivalent to the working conductor*, 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 *Emergency Gen, Promenade Deck Aft. Control from the Emergency Switchboard fixed in the same room. The generator is driven by a Diesel Engine, direct coupled*

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*, are separate screens provided for the use of oil and electric side lights *Yes*, are separate oil lanterns provided for the mast head lights and side lights *Yes*

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight *W.T. on Weather Decks, Eng. & Boiler Rooms etc.*, 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 _____

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 _____

Searchlight Lamps, No. of *One*, whether fixed or portable *Portable*, are their fittings as per Rule *Yes*

Arc Lamps, other than searchlight lamps, No. of *None*, 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 axis 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 _____, if not of this type, state distance of the combustible material horizontally or vertically above the motors _____ and _____

Control Gear and Resistances, are the generator field and motor speed regulators, starters and controllers constructed 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 _____

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office _____

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No of	RATED AT				EACH DRIVEN BY.	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	6	150	220	682	400	a 225 H.P. Comp'd. Vert. Steam Eng.	—	—
AUXILIARY	—	—	—	—	—	—	—	—
EMERGENCY	1	75	220/30	341	400	Diesel Engine	—	—
ROTARY TRANSFORMER	—	—	—	—	—	—	—	—

LIGHTING AND HEATING CONDUCTORS.

Ref. No.	DESCRIPTION.	No. of Conductors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Amperes.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	MAIN GENERATOR...	two per pole	.5	61	.103"	682	54	Vulc. India Rubber	Lead Sheathing
	AUXILIARY GENERATOR	one per pole	—	—	—	—	—	—	—
	EMERGENCY GENERATOR	one per pole	.6	91	.093"	341	36	V.I.R.	Lead Sheathing
	ROTARY TRANSFORMER...	—	—	—	—	—	—	—	—
	AUXILIARY SWITCHBOARDS	one per pole	.25	37	.093"	200	135	V.I.R.	Lead Sheathing
	ENGINE ROOM	one per pole	.007	7	.036"	15	40	V.I.R.	Steel-armoured & braided
	BOILER ROOM	one per pole	.06	19	.064"	83	500	V.I.R.	Lead Sheathing & steel-armoured & braided
	WIRELESS	one per pole	.0225	7	.064"	12.0	900	V.I.R.	Lead Sheathing
	SEARCHLIGHT	DO	.04	19	.052"	50.0	1200	DO	DO
	MASTHEAD LIGHT	DO	.003	3	.036"	.35	640	DO	DO
	SIDE LIGHTS	DO	.003	3	.036"	.35	120	DO	DO
	COMPASS LIGHTS	DO	.003	3	.036"	.1	36	DO	DO
	POOP LIGHTS	DO	.003	3	.036"	.55	960	DO	DO
	CARGO LIGHTS	DO	.06	19	.064"	40.0	960	DO	DO
	ARC LAMPS	—	—	—	—	—	—	—	—
	HEATERS	DO	.5	61	.103"	310.0	240	DO	DO

MOTOR CONDUCTORS.

Ref. No.	DESCRIPTION.	No. of Motors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Amperes.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	BALLAST PUMP	—	—	—	—	—	—	—	—
	MAIN BILGE LINE PUMPS	—	—	—	—	—	—	—	—
	GENERAL SERVICE PUMP	—	—	—	—	—	—	—	—
	EMERGENCY BILGE PUMP	1	.1	19	.083"	95	720	Vulc. India Rubber	Lead Sheathing
	SANITARY PUMP	—	—	—	—	—	—	—	—
	CIRC. SEA WATER PUMPS	—	—	—	—	—	—	—	—
	CIRC. FRESH WATER PUMPS	2	.25	37	.093"	540	210	DO	DO
	AIR COMPRESSOR	—	—	—	—	—	—	—	—
	FRESH WATER PUMP (Main)	1	.003	3	.036"	3	240	DO	DO
	ENGINE TURNING GEAR	—	—	—	—	—	—	—	—
	ENGINE REVERSING GEAR	—	—	—	—	—	—	—	—
	LUBRICATING OIL PUMPS	—	—	—	—	—	—	—	—
	OIL FUEL TRANSFER PUMP	—	—	—	—	—	—	—	—
	WINDLASS	—	—	—	—	—	—	—	—
	WINCHES, FORWARD	—	—	—	—	—	—	—	—
	WINCHES, AFT	—	—	—	—	—	—	—	—
	STEERING GEAR	2	.15	37	.092"	150	690	DO	DO
	WORKSHOP MOTOR	1	.007	7	.036"	8	220	DO	Lead Sheathing, sewed Steel-armoured & braided
	VENTILATING FANS	17	.25	37	.093"	187	240	DO	Lead Sheathing
	DO ENGINE & BOILER RMS	5	.0225	7	.064"	40	360	DO	DO

All Conductors are of annealed copper conforming to British Standard Specification No. 7.
 The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.
 The foregoing is a correct description.

W.S.

Electrical Engineers.

Date *4/10/23*

COMPASSES.

Distance between electric generators or motors and standard compass *Generators 204 ft. Nearest Motor 60 ft.*
 Distance between electric generators or motors and steering compass " *194* " " *50 ft.*

The nearest cables to the compasses are as follows:—

A cable carrying *18* Ampères *18* feet from standard compass *12* feet from steering compass.
 A cable carrying *28* Ampères *22* feet from standard compass *14* 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 *All* course in the case of the standard compass, and *Nil* degrees on *All* course in the case of the steering compass.

For HARLAND & WOLFF, LTD.

Builder's Signature.

Date *4/10/23*

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, &c.)

This installation is fitted in accordance with the Rules & the Workmanship is good. Tested under working & overload conditions & found satisfactory.

It is submitted that this vessel is eligible for the BROAD BEE LIGHT.
W.S. 2/10/23

Total Capacity of Generators *945* Kilowatts

The amount of Fee ... £ *55 : 10 : 6* When applied for, *28 : 9 : 23*

Travelling Expenses (if any) £ *✓* : *See debit book.* When received,

William Butler
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned



111922.—Transfer. (The Surveys are requested not to write on or below the space for Committee's Minute.)