

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 526

Port of *Nagasaki*. Date of First Survey *12. 1. 06*. Date of Last Survey *17. 12. 06* No. of Visits *12*.
 No. in on the *Iron or Steel* *T.S.S. "Hitachi Maru"* Port belonging to *Tokio*.
 Reg. Book Built at *Nagasaki*. By whom *Mitsui Bishi D. & E. Works* When built *1906*.
 Owners *Nippon Yusen Kaisha*. Owners' Address *Tokio*.
 Yard No. *188*. Electric Light Installation fitted by *Mitsui Bishi D. & E. Works*. When fitted *1906*.

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Two duplicate sets of a compound wound direct current dynamo mounted on the same bed plate as, and coupled direct to a vertical compound engine.

Capacity of Dynamo *315* Amperes at *100* Volts, whether continuous or alternating current *continuous*

Where is Dynamo fixed *in the thrust block recess.*

Position of Main Switch Board *Engine room after bulkhead* having switches to groups *Two to 74* of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each *port passage on upper deck & port passage on main deck of fore; in chart room on shade deck, on port & starboard passages on bridge deck, on port & starboard passages on upper deck, on fore bulkhead of port amidship at upper deck, on port & starboard passages & in pantry on after upper deck, in pantry on after main deck, on fore and after bulkhead in engine room.*

If cut outs are fitted on main switch board to the cables of main circuit *Yes* and on each auxiliary switch board to the cables of auxiliary circuits *Yes* and at each position where a cable is branched or reduced in size *Yes, in each fuse board.* and to each lamp circuit *No*

If vessel is wired on the double wire system are cut outs fitted to both flow and return wires or cables of all circuits including lamp circuits *Yes, exclusive lamp circuit*

Are the cut outs of non-oxidizable metal *Yes* and constructed to fuse at an excess of *not more than 100%* per cent over the normal current

Are all cut outs fitted in easily accessible positions *Yes, all in distributing board & submain boards* Are the fuses of standard dimensions *Yes* If wire fuses are used

are permanent instructions fitted on or near each switch board giving particulars of proper size of fuse for each circuit *Yes, on the cover of the boards*

Are all switches and cut-outs constructed of incombustible materials and fitted on incombustible bases *Yes.*

Total number of lights provided for *8 branch circuits* arranged in the following groups:—

A Fore circuit	30 lights each of 16 cp	9-50 candle power requiring a total current of	32.55	Amperes
A Searchlight	1 ne-Suez Canal Search light & one arc lamp		76.00	
B Fore bulkhead	4 lights each of 16 cp	25-50 candle power requiring a total current of	45.99	Amperes
B Bridge deck	65 "	5-32 "	42.00	
C Amidship	65 lights each of "	2-50 candle power requiring a total current of	39.90	Amperes
C After cargo	"	16- "	28.00	
D After	58 lights each of 16 cp	5- " candle power requiring a total current of	41.23	Amperes
E Engine room	73 lights each of "	1- " candle power requiring a total current of	42.63	Amperes
Two Mast head light with filament lamps each of	32	candle power requiring a total current of	2.44	Amperes
Two Side light with filament lamps each of	32	candle power requiring a total current of	2.44	Amperes

10 Cargo lights of each comprising of 50 candle power, whether incandescent or arc lights *incandescent*

If arc lights, what protection is provided against fire, sparks, &c. *No arc lamp for cargo purposes, but one Crompton's arc lamp provided with hexagonal globe and a search light in cage for Suez Canal.*

Where are the switches controlling the masthead and side lights placed *In wheel house on shade deck.*

DESCRIPTION OF CABLES.

Main cable carrying	273.30 Amperes, comprised of	37 wires, each	12 L.S.G. diameter,	3.1445 square inches total sectional area
Branch "	25.00	12	15	1.0779
Branch cables carrying	45.99 Amperes, comprised of	12 wires, each	15 L.S.G. diameter,	1.0322 square inches total sectional area
"	43.90	12	16	1.0608
Branch cables carrying	39.90 Amperes, comprised of	12 wires, each	16 L.S.G. diameter,	1.0608 square inches total sectional area
"	28.00	12	16	1.0342
Leads to lamps carrying	21.23 Amperes, comprised of	12 wires, each	16 L.S.G. diameter,	1.0608 square inches total sectional area
"	42.63	12	16	1.0608
Cargo light cables carrying	7.00 Amperes, comprised of	28 3 wires, each	38 L.S.G. diameter,	0.0792 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

The whole of the cables & wires used throughout installation are covered with pure & vulcanized india rubber, india rubber coated tape, the whole maintained together, braided cotton and then covered with a compound. The cable which are liable to be exposed to moisture or mechanical injury are protected by galvanized iron pipes and which are liable to heat are armoured with galv. iron wires covered with lead and fastened to bulkhead with screw clip.

Joints in cables, how made, insulated, and protected *All joints are made in brass terminal pieces fitted on china or marble bases in submain boards, distributing boards and extension boxes.*

Are all the joints of cables thoroughly soldered, resin only having been used as a flux *Yes* Are all joints in accessible positions, none being made in bunkers, cargo spaces, or spaces which may at any time be used for carrying cargo, stores, or baggage *Yes, all in accessible positions*

and a few extension boxes are fixed under main deck, being guarded by cast iron covers. Are there any joints in or branches from the cable leading from dynamo to main switch board *No.*

How are the cables led through the ship, and how protected *By double wired multiple switch board system and they are protected with iron pipe or galv. iron wires or lead cover.*



DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible *Yes, excepting those in iron pipes carried through bunks*
 What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture *protected by galvanized iron pipes*
 What special protection has been provided for the cables near galley or oil lamps or other sources of heat *Armoured by galv. iron wires*
 What special protection has been provided for the cables near boiler casings *Armoured by galv. iron wires*
 What special protection has been provided for the cables in engine room *Carried in galv. iron pipes, or armoured by galv. iron*
 How are cables carried through beams *through teak ferrules driven in the beams* through bulkheads, &c. *through watertight stuffing boxes*
 How are cables carried through decks *through lead or iron pipes lined with wood*
 Are any cables run through coal bunkers *Yes* or cargo spaces *Yes* or spaces which may be used for carrying cargo, stores, or baggage *Yes*
 If so, how are they protected *with galv. iron pipes or galv. iron wires*
 Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage *None in the bunkers, but some in cargo spaces*
 If so, how are the lamp fittings and cable terminals specially protected *All lamps protected with strong cast iron covers, and insulation boxes through cargo spaces*
 Where are the main switches and cut outs for these lights fitted *Fore bulkhead of amidship on upper deck and in after storage paint*
 If in the spaces, how are they specially protected *No*
 Are any switches or cut outs fitted in bunkers *No*
 Cargo light cables, whether portable or permanently fixed *All portable* How fixed *with fibre posts and secured with nuts in cases*
 In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel *✓*
 How are the returns from the lamps connected to the hull *✓*
 Are all the joints with the hull in accessible positions *✓*

VESSELS BUILT FOR CARRYING PETROLEUM.

In vessels built for carrying petroleum, are all switches and cut-outs fitted in positions not liable to the accumulation of petroleum vapour or gas *✓*
 Are any switches, cut outs, or joints of cables fitted in the pump room or companion *✓*
 How are the lamps specially protected in places liable to the accumulation of vapour or gas *✓*
 The installation is *✓* supplied with a voltmeter and *✓* an amperemeter, fixed *✓*

The copper used is guaranteed to have a conductivity of *100* per cent. that of pure copper.
 Insulation of cables is guaranteed to have a resistance of not less than *600* megohms per statute mile after 24 hours' immersion in seawater.

The foregoing statements are a correct description of the Electric Light Installation fitted by us on this vessel and we declare that it is at this date in good order and safe working condition.

P. Hamada Electrical Engineers

Date *15-12-06*

COMPASSES.

Distance between dynamo or electric motors and standard compass *112 ft.*
 Distance between dynamo or electric motors and steering compass *108 ft.*
 The nearest cables to the compasses are as follows:—
 A cable carrying *4.48* Amperes *8* feet from standard compass *6* feet from steering compass
 A cable carrying *✓* Amperes *✓* feet from standard compass *✓* feet from steering compass
 A cable carrying *✓* Amperes *✓* 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*
 The maximum deviation due to electric currents, etc., was found to be *Nil* degrees on *✓* course in the case of the standard compass and *✓* degrees on *✓* course in the case of the steering compass.

V. Sugitani Builder's Signature. Date *15-12-06*

GENERAL REMARKS.

This Installation has been fitted in accordance with the Rules tested and examined under full load and found satisfactory.

A. C. Heron

Surveyor to Lloyd's Register of British and Foreign Shipping.

Committee's Minute

It is submitted that the Record Elec. Light be noted in the Reg. Books.