

REPORT ON ELECTRIC LIGHTING INSTALLATION.

No. 1427

of Boston Date of First Survey 29 Oct 1920 Date of Last Survey 24 Nov 1920 No. of Visits 8
 in on the Iron or Steel S/S JAPAN ARROW Port belonging to New York
 Book 26 Built at Quincy, Mass. By whom Bethlehem S. B. Corporation When built 1920
Standard Transportation Co Owners' Address 26 Broadway, New York City
 No. 1386 Electric Light Installation fitted by Bethlehem S. B. Corporation When fitted 1920

DESCRIPTION OF DYNAMO, ENGINE, ETC.

2 - 20 K.W. General Electric Co's dynamos direct driven by vertical steam engines

Capacity of ^{each} Dynamo 182 Amperes at 110 Volts, whether continuous or alternating current continuous

Is Dynamo fixed Engine room Whether single or double wire system is used double

Position of Main Switch Board Engine room having switches to groups A to M of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each 1 in E.R with 10 + 1 with 8, 1 in officers quarters stateroom + 1 in officers

stateroom with 8 each, 1 in crew quarters aft with 10, 1 in crew quarters fore + 1 in crew quarters fore part with 10 + 8

twelve, 1 in pump room companion with 14, 1 in midship quarters with 14.

Fuses 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 and to each lamp circuit no

Wires in which fuses are fitted on the double wire system are fuses fitted to both flow and return wires or cables of all circuits including lamp circuits all but lamp circuits

Are the fuses of non-oxidisable metal yes and constructed to fuse at an excess of less than 100 per cent over the normal current

Are all fuses fitted in easily accessible positions yes Are the fuses of standard dimensions enclosed type 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 on fuse cases

Are all switches and fuses constructed of incombustible materials and fitted on incombustible bases yes

Total number of lights provided for 294 arranged in the following groups:—

Deck + Peak 57 lights each of 20 candle power requiring a total current of 19.7 Amperes

Pump Room 13 lights each of 20 candle power requiring a total current of 3 Amperes

Midship house 70 lights each of 20 candle power requiring a total current of 32 Amperes

Officers quarters 18 lights each of 20 candle power requiring a total current of 9.3 Amperes

Fore + aft 10 lights each of 20 candle power requiring a total current of 11.6 Amperes

4 Mast head light with 1 lamps each of 32 candle power requiring a total current of Amperes

2 Side light with 1 lamps each of 32 candle power requiring a total current of 4.5 Amperes

6 Cargo lights of 4 light clusters candle power, whether incandescent or arc lights incandescent

Where lights, what protection is provided against fire, sparks, &c. —

Where are the switches controlling the masthead and side lights placed Engine room + pilot house.

DESCRIPTION OF CABLES.

Each cable carrying 182 Amperes, comprised of 61 wires, each .057 S.W.G. diameter, .157 square inches total sectional area

Each cables carrying 19.7 Amperes, comprised of 61 wires, each .04 S.W.G. diameter, .078 square inches total sectional area

Each cables carrying 3 Amperes, comprised of 7 wires, each .045 S.W.G. diameter, .009 square inches total sectional area

Cables to lamps carrying 3 Amperes, comprised of 7 wires, each .025 S.W.G. diameter, .003 square inches total sectional area

Light cables carrying 2 Amperes, comprised of 17 wires, each .012 S.W.G. diameter, .003 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Heavy rubber insulation covered with braided waterproof fibre + carried in steel conduit throughout

How cables, how made, insulated, and protected Soldered, well taped + made in metal junction boxes

Are all the joints of cables thoroughly soldered, and the flux used not containing acids or other corrosive substances 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

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 steel conduit.

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DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible yes
 What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture steel conduit made tight
 What special protection has been provided for the cables near galleys or oil lamps or other sources of heat steel conduit
 What special protection has been provided for the cables near boiler casings steel conduit
 What special protection has been provided for the cables in engine room steel conduit
 How are cables carried through beams steel conduit through bulkheads, &c. steel conduit made tight
 How are cables carried through decks steel conduit made tight
 Are any cables run through coal bunkers no or cargo spaces no or spaces which may be used for carrying cargo, stores, or baggage yes
 If so, how are they protected steel conduit run high up under deck
 Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage In forward cargo hold
 If so, how are the lamp fittings and cable terminals specially protected Strong watertight fittings, with heavy glass globes + forecotte
 Where are the main switches and fuses for these lights fitted engine room + forecotte
 If in the spaces, how are they specially protected no
 Are any switches or fuses fitted in bunkers no
 Cargo light cables, whether portable or permanently fixed portable How fixed Attachment plugs provided
 In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel no
 How are the returns from the lamps connected to the hull no
 Are all the joints with the hull in accessible positions no
 Is the installation supplied with a voltmeter yes, and with an amperemeter yes with 2, fixed on main switches no

VESSELS BUILT FOR CARRYING PETROLEUM.

In vessels built for carrying petroleum, are all switches and fuses fitted in positions not liable to the accumulation of petroleum vapour or gas yes
 Are any switches, fuses, or joints of cables fitted in the pump room or companion no
 How are the lamps specially protected in places liable to the accumulation of vapour or gas Heavy gas tight glass globes with wire guards
 The copper used is guaranteed to have a conductivity of not less than that of the Engineering Standards Committee's standard and the wires are protected by tinning from the sulphur compounds present in the insulating material.
 Insulation of cables is guaranteed to have a resistance of not less than 600 megohms per statute mile at 60° Fahrenheit after 24 hours' immersion in water, the test being made after one minute's electrification at not less than 500 volts and while the cable is still immersed.

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.

BETHLEHEM SHIPBUILDING CORPORATION LTD.
 FORE RIVER PLANT
 J. W. Hecker Electrical Engineers Date 8 Dec 1920

COMPASSES.

GEN. MANAGER
 Distance between dynamo or electric motors and standard compass about 200 ft
 Distance between dynamo or electric motors and steering compass about 200 ft
 The nearest cables to the compasses are as follows:—
 A cable carrying Binnacle 4 Amperes close to feet from standard compass close to feet from steering compass
 A cable carrying Navigation light 4 Amperes about 8 feet from standard compass about 8 feet from steering compass
 A cable carrying Search light 35 Amperes " 8 feet from standard compass " 8 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 _____ degrees on _____ course in the case of the _____ standard compass and _____ degrees on _____ course in the case of the steering compass.

BETHLEHEM SHIPBUILDING CORPORATION LTD.
 FORE RIVER PLANT
 J. W. Hecker Builder's Signature. Date 8 December 1920
 GEN. MANAGER

GENERAL REMARKS. This Electric Light Installation has been fitted under Special Survey in accordance with the Rules + the workmanship + material are good. It has been satisfactorily tried under full load + it is now in good + safe working condition + eligible in my opinion to receive the notation ELEC. LIGHT in the Register Book.

This vessel is eligible for THE RECORD. Elec Light Recd 6/1/21
 John S. Hecker, Surveyor to Lloyd's Register of Shipping.

Committee's Minute New York DEC 14 1920
Elec. Lt.

Boston

Continuation of Report No. 1427 dated 3rd Dec 1920 on the

S/S Japan Arrow of New York.

Electric Lighting Installation

aps of Lights continued
 Searchlight requiring a total current of 35 amperes
 Quarter aft 72 lights each of 20 cp requiring a total current of 22.5 amperes
 Engine Room 36 " " " 20 " " " " " 10.2 "
 Boiler Room 18 " " " 20 " " " " " 8.6 "
 Foreless " " " " " " " 40 "
 Workshop " " " " " " " 60 "

Description of Cables continued

carrying 32 amperes comprised of 61 wires each .04" dia .078" total sectional area
 " 93 " " " 19 " " .045 " .031 " " " "
 " 116 " " " 7 " " .050 " .014 " " " "
 " 4.5 " " " 7 " " .050 " .014 " " " "
 " 35 " " " 19 " " .045 " .031 " " " "
 " 22.5 " " " 7 " " .057 " .018 " " " "
 " 10.2 " " " 7 " " .04 " .008 " " " "
 " 8.6 " " " 7 " " .04 " .008 " " " "
 " 40 " " " 19 " " .04 " .023 " " " "
 " 60 " " " 19 " " .045 " .031 " " " "

J. S. H.

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