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REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 1315

Port of Date of First Survey 5 Mar Date of Last Survey 14 April No. of Visits 13
 No. in on the Iron Steel 40 SOLITAIRE Port belonging to New York
 Book Built at Bath, Va. By whom The Trench Steamship Co. When built 1900
 Owners The Trench Steamship Co. Owners' Address 17 Battery Place, New York City
 No. 14 Electric Light Installation fitted by The Trench Steamship Co. When fitted 1900

DESCRIPTION OF DYNAMO, ENGINE, ETC.

115 KW generator duplex driven by Fairbanks Morse oil engine. 1 Auxiliary 20 KW dynamo
 next driven by Fairbanks Morse oil engine

Capacity of Dynamo 200 Amperes at 220 Volts, whether continuous or alternating current continuous

Where 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 & V of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each 1 tall table in Pilot House with 11, 1 in masthead house with 1
 1 in left Quarter with 6, 1 in aft quarter with 6, 1 in Dynamo Plant with 6, 1 in engine room with 6.

Are circuit breakers 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

Are fuses 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

Are the fuses of non-oxidizable metal yes and constructed to fuse at an excess of 125 per cent over the normal current

Are all fuses fitted in easily accessible positions yes 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 on fuse cases

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

Total number of lights provided for 218 arranged in the following groups:-

Fore Peak	12 lights each of	32	candle power requiring a total current of	12	Amperes
Pump Room	6 lights each of	32	candle power requiring a total current of	6	Amperes
Quarter Fore	49 lights each of	32	candle power requiring a total current of	9	Amperes
Quarter Aft	29 lights each of	32	candle power requiring a total current of	5	Amperes
" "	58 lights each of	32	candle power requiring a total current of	10	Amperes
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		Amperes
Cargo lights of		240	candle power, whether incandescent or arc lights		incandescent

Are 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 200 Amperes, comprised of 3 wires, each 0.25 S.W.G. diameter, 0.18 square inches total sectional area

Each cables carrying 12 Amperes, comprised of 7 wires, each 0.085 S.W.G. diameter, 0.14 square inches total sectional area

Each cables carrying 3 Amperes, comprised of 7 wires, each 0.085 S.W.G. diameter, 0.14 square inches total sectional area

Cables to lamps carrying 2 Amperes, comprised of 1 wires, each 0.63 S.W.G. diameter, 0.03 square inches total sectional area

Light cables carrying 14 Amperes, comprised of 7 wires, each 0.085 S.W.G. diameter, 0.14 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

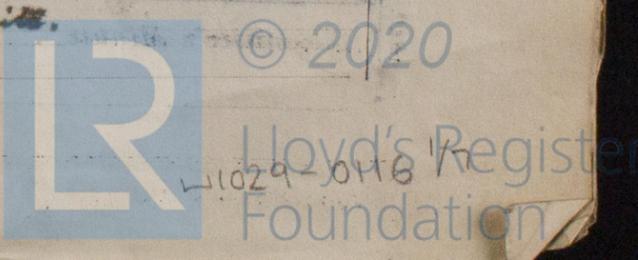
Heavy rubber insulation covered with leaded waterproof paper & carried in steel conduit throughout.

Are joints in cables, how made, insulated, and protected Soldered, well taped & made in metal junction boxes throughout

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

Where are the cables led through the ship, and how protected steel conduits.



WEB FRAMES, In F... COLLISION PARTITION LONGITUDINAL... STRAKES... THICKNESS OF SHEERSTRAKE CLEAR OF LONG BRIDGE... POOP SIDES... SHORT BRIDGE SIDES... FORECASTLE SIDES... UPPER DECK STRINGER PLATE... SECOND DECK STRINGER PLATE... LOWER MASTS... BOWSPRIT... TOPMASTS, YARDS AND RIGGING, MATERIAL AND SAILS.

DESCRIPTION OF INSULATION, PROTECTION, ETC. - continued.

Are they in places always accessible... What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture... steel conduits made tight... What special protection has been provided for the cables near galleys or oil lamps or other sources of heat... steel conduits... What special protection has been provided for the cables near boiler casings... no boiler... What special protection has been provided for the cables in engine room... steel conduits... How are cables carried through beams... steel conduits through bulkheads, &c. steel conduits made tight... How are cables carried through decks... steel conduits made tight... Are any cables run through coal bunkers... or cargo spaces... or spaces which may be used for carrying cargo, stores, or baggage... no... If so, how are they protected... no... Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage... no... If so, how are the lamp fittings and cable terminals specially protected... no... Where are the main switches and fuses for these lights fitted... no... 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... permanently fixed... How fixed... Standard on post, ledgers fixed... 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 for each dynamo and with an amperemeter... yes for each dynamo, fixed on main switch.

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... Plan... Are any switches, fuses, or joints of cables fitted in the pump room or companion... special report herewith on pump room arrangement... How are the lamps specially protected in places liable to the accumulation of vapour or gas... Heavy glass globes, gas tight, with wire... 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 warrant that it is at this date in good order and safe working condition.

The Texas Steamship Co. Electrical Engineers Date

COMPASSES.

Distance between dynamo or electric motors and standard compass... about 150 ft... Distance between dynamo or electric motors and steering compass... The nearest cables to the compasses are as follows: A cable carrying 3 Amperes about 6 feet from standard compass 6 feet from steering compass... A cable carrying 30 Amperes 8 feet from standard compass 8 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 degrees on course in the case of the standard compass and degrees on course in the case of the steering compass.

The Texas Steamship Co. Builder's Signature. Date

GENERAL REMARKS. This Electric Lighting Installation has been fitted on board under Special Survey in accordance with the Rules & approved plans, & it is the workman's hope that as good. It has been satisfactorily tried under full load & it is now in good working condition & eligible, in my opinion, to receive the notation 'ELEC. LIGHT' in the Register Book. It is submitted that this vessel is eligible for REG. RECORD. ELEC. LIGHT 2/15/20

Committee's Minute Elec. L. New York APR 27 1920

ELECTRIC LIGHTING INSTALLATION

Steamer "SOLITAIRE" of NEW YORK

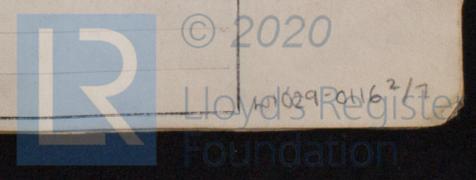
groups of lights continued

DYNAMO FLAT 27 lights each of 32 c.p. requiring a total current of 6 amps. ENGINE ROOM 23 lights each of 32 c.p. requiring a total current of 7 amps.

description of cables continued.

D, E, F, G, H, J requiring a maximum of 10 amps comprised of 7 wires each .0485 sq. in. total sectional area.

John S. Heck



REPORT ON ELECTRICAL INSTALLATION

of the steamer

"SOLITAIRE"

The electrical installation on this vessel is unusually extensive. There is no steam on board. Coal is used for the galley, and for heating the after staterooms. Otherwise, the whole working of the auxiliary machinery of the vessel is effected by electrical means.

There are three main dynamos of 45 KW each, generating continuous current of 230 volts and direct driven by Fairbanks Morse oil engines. There is also an emergency 10 KW dynamo direct driven by a smaller Fairbanks Morse oil engine, which drives an emergency air compressor. The dynamos and main switchboard are placed on a flat at the after end of the engine room. The main switchboard is so constructed that the dynamos can be run in parallel on any circuit or circuits. The bus bars can be divided so as to throw a partial load only on any dynamo desired. From the switchboard, cables are lead as necessary to the following auxiliaries.

STEERING GEAR

The steering gear is a "hydro electric" steering gear manufactured by the Hyde Windlass Co. An electric motor drives a pump which moves the tiller by means of two hydraulic rams. The control from the bridge is by means of the well-known Brown telemotor. Hand steering gear is provided for use in case of break down. The steering gear has been tested at sea in heavy weather, and is strong and efficient.

WINDLASS

The windlass is Hyde Windlass Co.'s make, driven by a geared electric motor. The controller and resistance boxes are watertight and well secured against seas. The windlass has been tested and found efficient.

CAPSTAN

A small capstan is fitted on the poop driven by a geared electric motor situated below deck. The controller is operated by a reach rod passing through a watertight stuffing box at the deck.

WHISTLE

The whistle is blown by air from the starting air receiver. It is somewhat smaller than would be fitted in a steamer of corresponding size, but complies with the requirements of American law. As the frequent use of the whistle would rapidly exhaust the supply of starting air, a large electric siren is provided for use in a fog.

ENGINE ROOM PUMPS

All engine room reciprocating pumps are driven by electric motors geared. The circulating pumps which are centrifugal, are direct driven by electric motors.

CARGO PUMPS AND FORWARD BALLAST PUMP

These pumps are driven by electric motors geared. They are, in case of necessity, placed at the bottom of the pump room. To guard against danger in case of accumulation of gases in the pump room, each motor is completely enclosed in a

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... tight case properly closed. Each motor case is ventilated by a fan exhausting
... the motor case and discharging to the air on deck.

A system of bell pushes is employed to signal the switchboard when
... desired to start a pump, but these bell pushes are also made gas tight. All
... pumps are started from the main switchboard, not from the pump room. Thus, the
... engineers always control the load which can be put on each dynamo.

The arrangements in pump room, therefore, vary somewhat from those
... contemplated by the Rules for Electric Lighting, but were necessary, in the circumstances
... being no steam on board. As far as can be seen, every precaution has been taken
... render the arrangement safe, and it is respectfully submitted that the Committee
... might approve of the same.

HEATING

The midships and forecastle quarters are heated by means of
... electrical heaters.

No means are provided for heating fuel oil, so that the vessel
... always have to be supplied with a light grade of fuel.

:: REMARKS ::

This electrical installation has been fitted under Special
... survey, in accordance with the Rules and approved plans; and the workmanship and
... material are good. It has been satisfactorily tested under full load and it is now
... good and safe working condition, and eligible, in my opinion to be approved by
... the Committee.

A detailed report of the sizes of wiring used on the various
... circuits is hereto appended. Details of Electric Lighting Installation report on usual
... form herewith.

John S. Heck.



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Lloyd's Register
Foundation

W1029-0163

Steamer "SOLITAIRE"

SIZES OF WIRINGMAIN CABLES TO SWITCHBOARDMain Generators

Carrying 200 amps comprised of 19 wires each .1056 dia. .166 sq. in. total sectional area.

Auxiliary Generators

Carrying 44 amps comprised of 7 wires each .0974 dia. .055 sq. in. total sectional area.

CIRCUITSMAIN SWITCHBOARDAft Winch ✓

20 HP carrying 60 amps, comprised of 7 wires each .0773 dia. .034 sq. in. total sectional area.

Forward Winch ✓

20 HP carrying 60 amps, comprised of 7 wires each .0773 dia. .034 sq. in. total sectional area.

Windlass ✓

20 HP carrying 60 amps, comprised of 7 wires each .0974 dia. .055 sq. in. total sectional area.

Capstan

20 HP carrying 60 amps, comprised of 7 wires, each .0773 dia. .034 sq. in. total sectional area.

Steering Gear

10 HP carrying 30 amps, comprised of 7 wires, each .0615 dia. .022 sq. in. total sectional area.

Heaters Quarters Forward

30 Carrying 12 amps comprised of 19 wires each .0664 dia. .063 sq. in. total sectional area.

Heaters Captains Quarters

30 Carrying 11 amps comprised of 19 wires each .0664 dia. .063 sq. in. total sectional area.

Ice Machine

3 HP carrying 10 amps comprised of 7 wires each .0386 dia. .008 sq. in. total sectional area.

Ice Machine

3 HP carrying 10 amps comprised of 7 wires each .0386 dia. .008 square in total sectional area.

Machine Shop

7½ HP carrying 22 amps comprised of 7 wires each .0386 dia. .008 sq. in. total sectional area.

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Sanitary Pump

HP carrying 15 amps comprised of 7 wires each .0386 dia. .008 sq. in. total sectional area.

Refrigerating Pump

HP carrying 15 amps comprised of 7 wires each .0386 dia. .008 sq. in. total sectional area.

F.O. Transfer

HP carrying 15 amps comprised of 7 wires each .0386 dia. .008 sq. in. total sectional area.

F. W. PUMP

HP carrying 15 amps comprised of 7 wires each .0386 dia. .008 sq. in. total sectional area.

Ventilation

HP carrying 10 amps comprised of 7 wires each .0386 dia. .008 sq. in. total sectional area.

Circulating Pump #1

60 HP carrying 60 amps comprised of 7 wires each .0773 dia. .034 sq. in. total sectional area.

Circulating Pump #2

60 HP carrying 60 amps comprised of 7 wires each .0773 dia. .034 sq. in. total sectional area.

Circulating Pump #3

60 HP carrying 60 amps comprised of 7 wires each .0773 dia. .034 sq. in. total sectional area.

Fire and Bilge Pump

60 HP carrying 60 amps comprised of 7 wires each .0773 dia. .034 sq. in. total sectional area.

Cargo Pump #1 ✓

90 HP carrying 90 amps comprised of 19 wires each .0664 dia. .063 sq. in. total sectional area.

Cargo Pump #2 ✓

90 HP carrying 90 amps comprised of 19 wires each .0664 dia. .063 sq. in. total sectional area.

Cargo Pump #3 ✓

90 HP carrying 90 amps comprised of 19 wires each .0664 dia. .063 sq. in. total sectional area.

Cargo Pump #4 ✓

90 HP carrying 90 amps comprised of 19 wires each .0664 dia. .063 sq. in. total sectional area.

Cargo Pump #5 ✓

90 HP carrying 90 amps comprised of 19 wires each .0664 dia. .063 sq. in. total sectional area.

Cargo Pump #6 ✓

90 HP carrying 90 amps comprised of 19 wires each .0664 dia. .063 sq. in. total sectional area.



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Transfer Pump

HP carrying 15 amps comprised of 7 wires each .0485 dia. .014 sq. in. total sectional area.

Hot Water Pump

HP carrying 3 amps comprised of 7 wires each .030 dia. .005 sq. in. total sectional area.

Syren

HP carrying 10 amps comprised of 7 wires each .0485 dia. .014 sq. in. total sectional area.

Oil Filter.

HP carrying 3 amps comprised of 7 wires each .030 dia. .005 sq. in. total sectional area.

Auxiliary Switchboard.

Six Battery Circuits each carrying 45 amperes comprised of 7 wires each .06/3 dia. .022 sq. in. total sectional area.

Air compressor circuit carrying 34 amperes comprised of 7 wires .06/3 dia. .022 sq. in. total sectional area.

2 Revolution indicators each carrying 10 amperes comprised of 1 wire of .064 dia. .003 total sectional area.

Steering gear Indicator carrying 1 ampere comprised of 1 wire of .064 dia. .003 sq. in. total sectional area.

Wireless carrying 16 amperes, comprised of 7 wires, each .0485 dia. .014 sq. in. total sectional area.

John S. Heck

Elec. Lt.

