

8<sup>th</sup> May 18

Received at London Office

Port of Copenhagen

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# REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 5545.

of Copenhagen Date of First Survey 18<sup>th</sup> Decr. 1917 Date of Last Survey 7<sup>th</sup> May 1918 No. of Visits 25  
on the Iron or Steel Twin S. & M. S. "LIMA" Port belonging to Stockholm.

Built at Copenhagen By whom Akt. Burmeister & Wain's Maskin og Skibsværk When built 1917-18.  
Rederiaktiebolaget Nordstjernan (A. A. Johnson). Owners' Address Stockholm.

313. Electric Light Installation fitted by Akt. Burmeister & Wain's Maskin og Skibsværk When fitted 1917-18.

## DESCRIPTION OF DYNAMO, ENGINE, ETC.

A compound wound dynamo driven by a shunt wound motor taking current from one of three compound wound motors, - each driven by an auxiliary Diesel oil engine.

Capacity of Dynamo 150 Amperes at 110 Volts, whether continuous or alternating current Continuous.

This Dynamo fixed In the engine room Whether single or double wire system is used Double wire system.

Position of Main Switch Board In the engineroom having switches to groups 7 of lights, &c., as below  
Positions of auxiliary switch boards and numbers of switches on each 2 switch boards in the engine room each having 10 switches. One in the chartroom having 3 switches. One switch board in the crew space forward, - one do. in the pantry to saloon, 2 do. in the ways to the officers accommodations - and one do. in the store room aft each having no switches.

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 Yes.

The vessel is wired on the double wire system are fuses fitted to both flow and return wires or cables of all circuits including lamp circuits Yes.

The fuses of non-oxidizable metal Yes and constructed to fuse at an excess of 100 per cent over the normal current

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 Edisons tools used.

All switches and fuses constructed of incombustible materials and fitted on incombustible bases Yes.

Number of lights provided for 157 arranged in the following groups :-

18	lights each of	16	candle power requiring a total current of	9	Amperes
12	lights each of	16-32	candle power requiring a total current of	8	Amperes
37	lights each of	16-25	candle power requiring a total current of	18	Amperes
32	lights each of	16-25	candle power requiring a total current of	16	Amperes
16	lights each of	16	candle power requiring a total current of	8	Amperes
42	"	16-100	"	29	"
2	Mast head light with 1 lamps each of	32	candle power requiring a total current of	2	Amperes
2	Side light with 1 lamps each of	32	candle power requiring a total current of	2	Amperes

10 Cargo lights of 100 candle power, whether incandescent or arc lights incandescent.

5 Cargo lights of 6 amperes are lamps. The arcs are entirely enclosed with glass globes and lamps provided with wire guarded lanterns.

There are the switches controlling the masthead and side lights placed In the chartroom.

## DESCRIPTION OF CABLES.

in cable carrying 150 Amperes, comprised of 19 wires, each 2.52 m/m	S.W.G. diameter, 95 square inches total sectional area
in cable carrying 29 Amperes, comprised of 7 wires, each 1.35 m/m	S.W.G. diameter, 10 square inches total sectional area
in cable carrying 18 Amperes, comprised of 7 wires, each 1.05 m/m	S.W.G. diameter, 6 square inches total sectional area
to lamps carrying 8 Amperes	0.85 m/m diameter 4 square inches total sectional area
6 Amperes, comprised of one wire, each 1.38 m/m	S.W.G. diameter, 1.5 square inches total sectional area
6 Amperes, comprised of flexible wires, each	S.W.G. diameter, 1.5 square inches total sectional area

## DESCRIPTION OF INSULATION, PROTECTION, ETC.

Copper wires are tinned and insulated with pure and vulcanized india rubber then taped and lead covered.

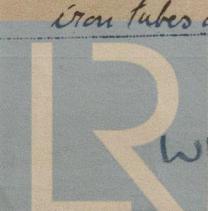
Copper wires are tinned and insulated with pure and vulcanized india rubber taped and lead covered then taped and armoured galvanized wire, or armoured with two layers of steel tape according to the Rule requirement.

Splices in cables, how made, insulated, and protected In watertight junction boxes with screwed connections and covers.

all the joints of cables thoroughly soldered, and the flux used not containing acids or other corrosive substances Yes Are all joints in accessible (No bunkers).

positions, none being made in bunkers, cargo spaces, or spaces which may at any time be used for carrying cargo, stores, or baggage in cargo spaces and in spaces used for carrying stores or baggage made in watertight junction boxes with screwed connections and 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 Secured by secured clips, cables armoured and where necessary protected by iron tubes or Casings.



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## FRAMES.

Fore Body, No. brdth.  
Stringers " " "  
MOTOR E. & R. Space, brdtl  
After Body, No. brdth.  
Stringers " " "  
Angles to Web  
ES to Stringe  
oth and thickness

Number.	Per Rule.	Th
1	1	3
1	1	3
1	1	3
1	1	3
✓		
✓		

A	Breadth
Inches.	
54	
63	
60	
64	
64	
60	
58	
54	
58	
54	
51	
52	
49	
59	

## 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. The cables are wire or steel tape armoured and where necessary protected by iron casings.

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat. Wire or steel tape armoured.

What special protection has been provided for the cables near boiler casings. No boiler casing.

What special protection has been provided for the cables in engine room. Wire or steel tape armoured cables used.

How are cables carried through beams. The cables are wire or steel tape armoured through bulkheads, &c. If watertight, - screws of Cylinders.

How are cables carried through decks. Through iron tubes.

Are any cables run through coal bunkers No bunkers or cargo spaces Yes or spaces which may be used for carrying cargo, stores, or baggage.

If so, how are they protected. The cables are wire or steel tape armoured and where necessary protected by iron.

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage. No bunkers, in spaces used for cargo are fitted.

If so, how are the lamp fittings and cable terminals specially protected. Lamps wire guarded, cable terminals protected by screws.

Where are the main switches and fuses for these lights fitted. Switches fitted where not exposed to damage, - the fuses are fitted.

If in the spaces, how are they specially protected. ✓

Are any switches or fuses fitted in bunkers. No bunkers.

Cargo light cables, whether portable or permanently fixed. Portable. How fixed ✓

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel. Double wire system used.

How are the returns from the lamps connected to the hull. ✓

Are all the joints with the hull in accessible positions. ✓

Is the installation supplied with a voltmeter. Yes, and with an ammeter. Yes, fixed on main service connection.

## 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. The vessel is fitted for liquid fuel.

Are any switches, fuses, or joints of cables fitted in the pump room or companion. No special pump room.

How are the lamps specially protected in places liable to the accumulation of vapour or gas. In the engine room, protected by pipes.

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° F. after 24 hours' immersion in water, the test being made after one minute's electrification at not less than 5000 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.

*AKTIESELSKABET*  
*BURMEISTER & WANG MÅSEN OG SKIBSBYGGERI*

Electrical Engineers

Date May 8th 1918

## COMPASSES.

Distance between dynamo or electric motors and standard compass about 52 feet.

Distance between dynamo or electric motors and steering compass — 40 feet.

The nearest cables to the compasses are as follows :—

A cable carrying	6	Amperes	6	feet from standard compass	12	feet from steering compass
A cable carrying	0.5	Amperes	To lamp in the	feet from standard compass and to lamp in the	feet from steering compass	length of plain
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 none degrees on all courses in the derial of starboard compass and more degrees on all courses in the case of the steering compass.

*AKTIESELSKABET*  
*BURMEISTER & WANG MÅSEN OG SKIBSBYGGERI*

Builder's Signature. Date May 8th 1918

GENERAL REMARKS. The whole electric lighting installation as above described, and the electric power installed are fitted in accordance with the Rules, the approved plan and London letter E dated the 14th March 1916.

The workmanship and the material used are of good description in every respect, - the whole installation has been tested under working condition and found satisfactory.

Recommend the vessel to have notation of "Electric light" in the Register Book.  
It is submitted that this vessel is eligible for

THE RECORD. E/ec. light. *H.W.* 22/5/18.

Surveyor to Lloyd's Register of Shipping PERHE

Committee's Minute

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