

REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 6090.

Port of Copenhagen Date of First Survey 13th Dec. 20 Date of Last Survey 10th Febr. 21 No. of Visits 18.
 No. in Reg. Book 78959 on the ~~Iron~~ Steel Twin S. S. "Formosa" Port belonging to Gothenburg.
 Built at Copenhagen By whom Akt. Burmeister & Wain's Maskin- og Skibbyggeri When built 1920-21.
 Owners Akt. Svenska Ostasiatiska Kompaniet (Dan Brostrom) Owners' Address Gothenburg.
 Yard No. 315 Electric Light Installation fitted by Akt. Burmeister & Wain's Maskin- og Skibbyggeri When fitted 1920-21.

DESCRIPTION OF DYNAMO, ENGINE, ETC.

One compound wound dynamo driven by a shaft motor taking current from one of 3 compound wound dynamos, each worked by an auxiliary Diesel oil engine.

Capacity of Dynamo 145 Amperes at 115 Volts, whether continuous or alternating current continuous.

Where is Dynamo fixed In the motor room Whether single or double wire system is used double wire system

Position of Main Switch Board In the motor room having switches to groups 7 of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each One in chart room for 1 group with 1 switch. One in the pantry for 1 group, one amidships for 6 groups, - and one aft for 4 groups, each having no switches. One in the motor room for 8 groups with 16 switches. One in the pantry for 4 groups with 4 switches. One at the fore mast for 4 groups with 4 switches. One at the main mast for 4 groups with 4 switches. One amidships for 4 groups with 4 switches.

If 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

If 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

Are the fuses of non-oxidizable metal yes and constructed to fuse at an excess of 100 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 Edison's tools used.

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

Total number of lights provided for abt. 200 arranged in the following groups :-

Total number of lights provided for				247.	200	arranged in the following groups.		
A	10	lights each of	10, 16, 25 & 32	candle power requiring a total current of	6	Amperes		
B	48	lights each of	10, 16 & 25	candle power requiring a total current of	15	Amperes		
C	48	lights each of	10, 16, 25 & 100	candle power requiring a total current of	15	Amperes		
D	52	lights each of	16, 50 & 100	candle power requiring a total current of	21	Amperes		
E	32	" " "	10, 16	" " "	9	"		
F	5 cargo lights and 3	lights each of	1/2 Watt lamps each of 1000	candle power requiring a total current of	22	Amperes		
G	3	" " "	1/2 Watt lamps each of 1000	" " "	17.5	"		
H	2 Mast head light with	one	lamps each of	32	candle power requiring a total current of	2	Amperes	
I	2	Side light with	one	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.

If are lights, what protection is provided against fire, sparks, &c. No arc lights fitted.

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

DESCRIPTION OF CABLES.

Main cable carrying	180	Amperes, comprised of	37	wires, each	2.03	m/m diameter,	120	square inches total sectional area
Branch cables carrying	22	Amperes, comprised of	7	wires, each	1.7	m/m diameter,	16	square inches total sectional area
Branch cables carrying	18	Amperes, comprised of	7	wires, each	1.05	m/m diameter,	6	square inches total sectional area
Leads to lamps carrying	6	Amperes, comprised of	1	wire, each	"	S.W.G. diameter,	1.5	square inches total sectional area
Cargo light cables carrying	4.5	Amperes, comprised of	flexible	wires, each	"	S.W.G. diameter,	2.5	square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

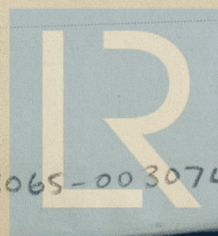
The copper wires are tinned and insulated with pure and vulcanized india rubber, then taped and lead covered.
 The copper wires are tinned and insulated with pure and vulcanized india rubber, taped and lead covered, then taped and armoured with galvanized wires, or armoured with two layers of steel tape and braided. -

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

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 Secured by screwed clips and where necessary protected by iron tubes or iron casings. -



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003065-003074-0101

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 *Armoured cables used and where necessary protected by iron tubes or casings.*

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat *Armoured cables used.*

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

What special protection has been provided for the cables in engine room *Armoured cables used.*

How are cables carried through beams *Armoured cables used* through bulkheads, &c. *If watertight screwed glands used.*

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 *yes*

If so, how are they protected *Armoured cables used, and where necessary protected by iron tubes or casings.*

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 ✓

Where are the main switches and fuses for these lights 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 amperemeter *yes*, fixed on the main switch board.

VESSELS BUILT FOR CARRYING PETROLEUM.

The vessel is fitted for liquid fuel.

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 special pump room.*

How are the lamps specially protected in places liable to the accumulation of vapour or gas *In the motor room protected by glass globes.*

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.

BURMEISTER & WAINSKIN- OG SKIBSBYGGERI.

H. P. Møller

Electrical Engineers

Date *12 March 1921*

COMPASSES.

Distance between dynamo or electric motors and standard compass

abt. 59 feet.

Distance between dynamo or electric motors and steering compass

46 "

The nearest cables to the compasses are as follows:—

A cable carrying	6	Ampères	9	feet from standard compass	8	feet from steering compass
A cable carrying	0.5	Ampères	to the lamp in the	feet from standard compass	and in the	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

The maximum deviation due to electric currents, etc., was found to be *0* degrees on *all* course in the case of the

standard compass and *all* degrees on *all* course in the case of the steering compass.

BURMEISTER & WAINSKIN- OG SKIBSBYGGERI.

H. P. Møller

Builder's Signature.

Date *12 March 1921*

GENERAL REMARKS.

The whole electric lighting installation as above described and the electric power installation are fitted in accordance with the Rules, the approved plan and London Letter E dated 6/9.20. The workmanship and the material used in the installation are of good description in every respect, and the whole electric lighting and power installation has been tested under full power working condition and found to work satisfactorily.

Recommend the vessel to have notation of "Electric Light" in the Register Book.

It is recommended that this vessel is eligible for THE RECORD. Elec Light. Bell 1/4/21

A. O. J. J. J.

Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI. 1 APR. 1921*

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.