

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL) Received at London Office 11 SEP 1935

Date of writing Report 6<sup>th</sup> Sept. 1935 When handed in at Local Office 19 Port of Copenhagen

No. in Survey held at Copenhagen Date, First Survey 23<sup>rd</sup> July Last Survey 29<sup>th</sup> August 1935  
Reg. Book. 38409 on the Single Screw Motor Vessel "HÖEGH CARRIER" Tons { Gross 4906  
Net 2964

Built at Copenhagen By whom built Chr. Rumseiler & Waini Yard No. 614 When built 1935  
Owners Skibs A/S "Orustien" Port belonging to Oslo  
Electric Light Installation fitted by The builders Contract No.          When fitted 1935  
Is the Vessel fitted for carrying Petroleum in bulk no

System of Distribution 2 conductor insulated system.  
Pressure of supply for Lighting 220 volts, Heating 220 volts, Power 220 volts.

Direct or Alternating Current, Lighting direct Power direct

If alternating current system, state frequency of periods per second         

Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off yes

Generators, do they comply with the requirements regarding temperature rise yes, are they compound wound yes

are they over compounded 5 per cent. yes, if not compound wound state distance between each generator         

Where more than one generator is fitted are they arranged to run in parallel yes, is an adjustable regulating resistance fitted in series with each shunt field yes

approved sent herewith Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing         

Are all terminals accessible, clearly marked, and furnished with sockets yes, are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched yes

Position of Generators in the engine room, floor level., is the ventilation in way of the generators satisfactory yes, are they clear of all inflammable material yes, if situated near unprotected

woodwork or other combustible material, state distance of same horizontally from or vertically above the generators no woodwork and         , are the generators protected from mechanical injury and damage from water, steam or oil yes, are their axes of rotation fore and aft yes

Earthing, are the bedplates and frames of the generating plant efficiently earthed yes, are the prime movers and their respective generators in metallic contact yes

Main Switch Boards, where placed in the forward end of the engine room, port side, floor level If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard         

Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes yes, are they protected from mechanical injury and damage from water, steam or oil yes, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards no woodwork and         , are they constructed wholly of durable, non-ignitable non-absorbent materials yes, is all insulation of high dielectric strength and of permanently high insulation resistance yes

is it of an approved type yes, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework yes, is the non-hygroscopic insulating material of an approved type yes, and is the frame effectively earthed yes, Are the fittings as per Rule regarding:— spacing or shielding of live parts         , accessibility of all parts yes, absence of fuses on back of board yes, temperature rise of omnibus bars yes, individual fuses to voltmeter, pilot or earth lamp yes, are moving parts of switches alive in the "off" position no, are all screws and nuts securing connections effectively locked yes, are any fuses fitted on the live side of switches         

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches OUTGOING CIRCUITS:— 2 double pole switches with fuses on each pole

GENERATORS:— 2 3 pole switches with overload & reversed current trips

Are turbine driven generators fitted with emergency trip switch as per rule          Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material yes Instruments on main switchboard 5 ammeters 3

voltmeters          synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection         

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system yes

1 set of earth lamps, 1 voltmeter with ohm scale Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules yes, are the fusible cutouts of an approved type yes, have the reversed

current protection devices been tested under working conditions *yes* **Joint Boxes, Section and Distribution Boards**, is the construction, protection, insulation, material, and position of these as per rule *yes*

**Cables:** Single, twin, concentric, or multicore *Single core* are the cables insulated and protected as per Tables IV, V, X or XI of the Rules *yes*

If the cables are insulated otherwise than as per Rule, are they of an approved type *yes* **Fall of Pressure**, state maximum between bus bars and any point of the installation under maximum load *at 6 volts*

**Cable Sockets**, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets *yes* **Paper Insulated and Varnished Cambric Insulated Cables**, If conductors are paper or varnished cambric insulated, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *yes*, or waterproof insulating tape *yes* **Cable Runs**, are the cables fixed as far as possible in accessible positions not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical damage *yes* Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit *lead covered*

**Support and Protection of Cables**, state how the cables are supported and protected *Armoured cables used laid on galvanized steel plates, secured by steel clips.*

If cables are run in wood casings, are the casings and caps secured by screws *yes*, are the cap screws of brass *yes*, are the cables run in separate grooves *yes*. If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII *yes*

**Refrigerated Chambers**, are the cables and fittings in accordance with the special requirements *yes*

**Joints in Cables**, state if any, and how made, insulated, and protected *no joints in cables*

**Watertight Glands and Deck Tubes**, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands *yes* **Bushes in Beams and Non-watertight Partitions**, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed *yes* state the material of which the bushes are made *lead*

**Earthing Connections**, state what earthing connections are fitted and their respective sectional areas *yes*, are their connections made as per Rule *yes*

**Alternative Lighting**, are the groups of lights in the propelling machinery space arranged as per Rule *yes* **Emergency Supply**, state position and method of control of the emergency supply and how the generator is driven *Switchboard for light & the generator set driven by 2 cyl 4SCSA petrol engine, placed in deck hold, connected to main switchboard by a change over switch.*

**Navigation Lamps**, are these separately wired *yes*, controlled by separate switch and separate fuses *yes*, are the fuses double pole *yes*, are the switches and fuses grouped in a position accessible only to the officers on watch *yes*, has each navigation lamp an automatic indicator as per Rule *yes* **Secondary Batteries**, are they constructed and fitted as per Rule *yes*

**Fittings**, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight *yes*, are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected *no*, are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected *no*, how are the cables led *yes*

where are the controlling switches situated *yes*

are all fittings suitably ventilated *yes*, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials *yes*

**Heating and Cooking Appliances**, are they constructed and fitted as per Rule *yes*, are air heaters constructed and fitted as per Rule *yes*

**Searchlight Lamps**, No. of *yes*, whether fixed or portable *yes*, are their fittings as per Rule *yes*

**Arc Lamps**, other than searchlight lamps, No. of *yes*, are their live parts insulated from the frame or case *yes*, are their fittings as per Rule *yes*

**Motors**, are their working parts readily accessible *yes*, are the coils self-contained and readily removable for replacement *yes*, are the brushes, brush holders, terminals and lubricating arrangements as per Rule *yes*, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material *yes*, are they protected from mechanical injury and damage from water, steam or oil *yes*, are their axes of rotation fore and aft *yes*, if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type *no wood work*, if not of this type, state distance of the combustible material horizontally or vertically above the motors *yes* and *yes*

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing *yes* **Control Gear and Resistances**, are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule *yes* **Lightning Conductors**, where lightning conductors are required, are these fitted as per Rule *yes* **Ships carrying Oil having a Flash Point less than 150 F.** Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings *yes* are all fuses of the filled cartridge type *yes* are they of an approved type *yes*

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office *yes*

**Spare Gear**, if the vessel is for open sea service have spares been supplied as per Rule *yes*

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	66	220	300	320	2 cyl 2SCSA Diesel engine	crude oil	about 150°F
ACCOMMODATION	1	33	220	150	320	---	---	---
EMERGENCY	1	4	220	18	1800	2 cyl 4SCSA petrol engine	petrol	---
ROTAARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.)	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole Sq. mm.	No.	Diameter.	In Circuit.	Rule.			
66KW MAIN GENERATOR	2	95	19	2.53	300	303	17-16	India rubber	Lead covered and wire armoured
EQUALISER CONNECTIONS	1	70	19	2.53	13	124	85-8	---	---
33KW AUXILIARY GENERATOR	1	95	19	2.53	150	151.5	67	---	---
EMERGENCY GENERATOR	1	4	7	0.85	18	22	6	---	---
ROTAARY TRANSFORMER									
ENGINE ROOM	1	4	7	0.85	10	22	70	---	---
BOILER ROOM									
AUXILIARY SWITCHBOARDS									
Light Switch board	1	16	7	1.7	43	49	70	---	---
Workshop machinery	1	4	7	0.85	126	22	44	---	---
Water separator heaters	1	35	19	1.53	78	78	75	---	---
Sub-...	1	35	19	1.53	78	78	75	---	---
Hangar	1	2.5	7	0.67	18	16	118	---	---
ACCOMMODATION									
Saloon & Captain	1	4	7	0.85	14	22	102	---	---
Officers	1	4	7	0.85	14	22	2	---	---
Crew	1	2.5	7	0.67	16	107		---	---
WIRELESS	1	10	7	1.35	20	38	118	---	---
SEARCHLIGHT									
MASTHEAD LIGHT	1	1.5	1	1.38	0.18	9		---	---
SIDE LIGHTS	1	1.5	1	1.38	0.18	9		---	---
COMPASS LIGHTS	1	1.5	1	1.38	0.07	9		---	---
POOP LIGHTS	1	1.5	1	1.38	0.12	9		---	---
CARGO LIGHTS									
ARC LAMPS									
WATER HEATERS	1	10	7	1.35	27	38	60	---	---
BATH ROOM HEATERS	1	6	7	1.05	18	29	50	---	---

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.)	Insulated with	HOW PROTECTED.
		No. per Pole.	Total Nominal Area per Pole Sq. mm.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	1	35	19	1.53	80	78	81	India rubber	Lead covered and wire armoured
MAIN BILGE LINE PUMPS	1	1	16	7	1.7	40	49	62	---	---
DEPT TANK GENERAL SERVICE PUMP	1	1	25	7	2.13	60	65	48	---	---
EMERGENCY BILGE PUMP										
SANITARY PUMP										
2 LUB. OIL CIRC. SEA WATER PUMPS	2	1	95	19	2.53	160	152	39	---	---
CIRC. FRESH WATER PUMPS										
AIR COMPRESSOR										
FRESH WATER PUMP										
ENGINE TURNING GEAR	1	1	10	7	1.35	32	38	68	---	---
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS										
OIL FUEL TRANSFER PUMP	1	1	16	7	1.7	40	49	73	---	---
WINDLASS										
2-25HP HANDLOSS WINCHES, FORWARD	3	1	120	37	2.03	230	231	139	---	---
2-35HP WINCHES, AFT	2	1	120	37	2.03	230	231	139	---	---
4-25HP WARRING W. WINCHES, AFT	5	1	185	37	2.32	340	340	113	---	---
2-25HP STEERING GEAR	2	1	95	19	2.53	170	185	55	---	---
(a) MOTOR GENERATOR	1	1	35	19	1.53	72	78	171	---	---
(b) MAIN MOTOR										
WORKSHOP MOTOR										
VENTILATING FANS										
CO. COMPRESSOR	1	1	10	7	1.35	24	38	44	---	---
Fuel. lub. oil separator	3	1	4	7	0.85	10	22	10	---	---
Lub.	1	1	2.5	7	0.67	6.6	16	10	---	---
Drilling machine	1	1	1.5	1	1.38	6	9	10	---	---
Emergency wheel	1	1	1.5	1	1.38	6	9	4	---	---
Oil fuel. fuel pump	2	1	2.5	7	0.67	8	16	40	---	---

All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electrical Commission Publication No. 28).

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

BURMEISTER & WAINSKIN-OG SKIBSBYGGERI

H. Alne

Electrical Engineers.

Date

COMPASSES.

Distance between electric generators or motors and standard compass ab. 35 m to Dynamo, ab. 20 m to motor

Distance between electric generators or motors and steering compass " " " " " " " " " " " "

The nearest cables to the compasses are as follows:—

A cable carrying ab 2 Ampères 5 m feet from standard compass 4 m feet from steering compass.

A cable carrying ab 0.07 Ampères to lamp in feet from standard compass and in 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 yes

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted yes

The maximum deviation due to electric currents was found to be 0 degrees on any course in the case of the standard compass, and 0 degrees on any course in the case of the steering compass.

AKTIESELSKABET BURMEISTER & WAINSKIN-OG SKIBSBYGGERI

H. Alne

Builder's Signature.

Date

Is this installation a duplicate of a previous case no If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.)

The electric installation as above described has been fitted in accordance with the Rules, the approved plans and the requirements contained in the Secretary's letter E dated 28<sup>th</sup> February 1935

The material & workmanship are of good description.

On completion the installation was tested as per Rules & under full load and found satisfactory.

Noted  
Jmu  
13.9.35

Total Capacity of Generators 169 Kilowatts.

The amount of Fee ... Pr. 782.88

When applied for,

16.9.35

When received,

16.10.35

Travelling Expenses (if any) £

J. Langhans Jensen  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE. 17 SEP 1935

Assigned

See minute on  
J.E. Rpt.

2m. 5.34. Transfer. The Signatories are requested not to write on or below the space for Committee's Minute.



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