

Rpt. 13.

No. 1524.

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

Date of writing Report 11th Jan. 1937 When handed in at Local Office 12th Jan. 1937 Port of Mahmro
 No. in Survey held at Mahmro Date, First Survey 16th Nov. 36 Last Survey 7th Jan. 1937
 Reg. Book No. 88569 on the Single Screw Motor Tanker "HAKKONG" (Number of Visits 18)
 Built at Mahmro By whom built Kockumns M. V. 703 Yard No. 192 When built 1937
 Owners Ms Haritor Port belonging to Ocho
 Electric Light Installation fitted by Kockumns M. V. 703 Contract No. ✓ When fitted 1937
 Is the Vessel fitted for carrying Petroleum in bulk Yes

System of Distribution

Pressure of supply for Lighting 110 volts, Heating 110 volts, Power 110 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

Have certificates of test results for machines under 100 kw. been submitted and approved Yes Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes

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 Main - One on each side at the fore end of the motor space. Auxiliary steam driven generator - One on 2nd deck port side of motor space 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 ✓ and ✓, are the generators protected from mechanical injury and damage from water, steam or oil Yes, are their axes of rotation fore and aft ✓

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 At fore end of motor space (centre)

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 ✓ and ✓, are they constructed wholly of durable, non-ignitable non-absorbent materials Main - Steel, 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 micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework No conducting parts pass through the slab., is the non-hygroscopic insulating material of an approved

type ✓, and is the frame effectively earthed Yes. Are the fittings as per Rule regarding:— spacing or shielding of live parts Yes, accessibility of all parts Yes, absence of fuses on back of board See appx. plan, 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 No Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches Generators - A double pole circuit breaker with overload and reverse current trips and a single pole equalizer switch. Circuits - A double pole linked switch and a fuse on each pole.

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 8 ammeters 3

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

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system Ohm meters, lamps. 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

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002427-002434-0088 1/2

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Foundation

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 are the cables insulated and protected as per Tables IV, V, X, and 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 Less than allowed in Sec. 4

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

Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit

Armoured

Support and Protection of Cables, state how the cables are supported and protected

Supported by metal clips and where necessary protected by steel sheet

If cables are run in wood casings, are the casings and caps secured by screws

Yes

are the cap screws of brass

Yes

separate grooves 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 main or power cables. Branch Metal joint boxes

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

Navigation Lamps, are these separately wired

Yes

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

Yes

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected

Lamps contained

in gastight fittings

In gastight tubing

where are the controlling switches situated

Outside the dangerous spaces

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

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

Yes

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 fitted 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, and some rotors with shafts in addition

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	2-120	115	2-1045	350	Heavy oil engines	Heavy oil	Above 150° F.
AUXILIARY	1	15	110	136	600	Steam engine		
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	No. of	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 mm.	In Circuit.	Revs. per Min.			
MAIN GENERATOR	4	✓	240	61	2.24	1050	about 1100	max. 17	Rubber	Lead covered & arm. with galv. steel tape.
EQUALISER CONNECTIONS	1		3-240	61	2.24	-	-	" 17	"	"
AUXILIARY GENERATOR	1		95	19	2.52	136	150	46	"	"
EMERGENCY GENERATOR										
ROTARY TRANSFORMER MOTOR										
ENGINE ROOM	1		16	7	1.71	40	50	16	"	"
BOILER ROOM	1		16	7	1.71	40	50	16	"	"
AUXILIARY SWITCHBOARDS	A		50	19	1.83	93	100	177	"	"
"	B		16	7	1.71	30	50	65	"	"
"	C		16	7	1.71	30	50	72	"	"
"	D		6	7	1.05	10	30	200	"	"
"	E		6	7	1.05	14	30	90	"	"
ACCOMMODATION	1		1.5	7	0.52	max. 4	8	max. 30	"	Lead covered.
WIRELESS	1		50	19	1.83	-	-	167	"	Lead covered & arm. with galv. steel tape.
SEARCHLIGHT	1		35	7	2.52	40	75	253	"	"
MASTHEAD LIGHT	1		1.5	7	0.52	0.6	8	max. 90	"	"
SIDE LIGHTS	1		1.5	7	0.52	0.6	8	30	"	"
COMPASS LIGHTS	1		1.5	7	0.52	0.6	8	30	"	"
POOP LIGHTS	1		1.5	7	0.52	0.6	8	245	"	"
DECK LIGHTS	1		1.5	7	0.52	max. 4	8	max. 110	"	"
ARC LAMPS	1		120	37	2.03	165	170	118	"	"
HEATERS	2		150	37	2.3	398	400	177	"	"

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 mm.	In Circuit.	Revs. per Min.			
BALLAST PUMP	2		35	7	2.52	64	75	max. 52	Rubber	Lead covered & arm. with galv. steel tape.
MAIN BILGE LINE PUMPS										
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP										
SANITARY PUMP										
CIRC. SEA WATER PUMPS	2		185	37	2.52	224	240	max. 48	"	"
CIRC. FRESH WATER PUMPS	1		16	7	1.71	45	50	32	"	"
COMPRESSOR CO ₂	1		50	19	1.83	80	100	84	"	"
FRESH WATER PUMP	1		2.5	7	0.67	7	15	94	"	"
ENGINE TURNING GEAR	1		70	19	2.51	112	125	86	"	"
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS	2		120	37	2.03	300	340	max. 58	"	"
OIL FUEL TRANSFER PUMP	1		16	7	1.71	40	50	66	"	"
WINDLASS										
WINCHES, FORWARD										
WINCHES, AFT										
STEERING GEAR—										
(a) MOTOR GENERATOR	1		70	19	2.51	max. 150	250	100	"	"
(b) MAIN MOTOR	1		6	7	1.05	25	30	70	"	"
WORKSHOP MOTOR	1		10	7	1.35	30	40	66	"	"
VENTILATING FANS	1		150	37	2.3	165	200	73	"	"
Int. oil separator	1		10	7	1.35	30	40	82	"	"
" heater	1		150	37	2.3	165	200	76	"	"

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All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electro-technical 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.

W. H. Green Electrical Engineers.

Date 11th Jan. 1937.

COMPASSES.

Distance between electric generators or motors and standard compass

Distance between electric generators or motors and steering compass *From motor room to bridge.*

The nearest cables to the compasses are as follows:—

A cable carrying Amperes feet from standard compass feet from steering compass.

A cable carrying Amperes feet from standard compass 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

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

The maximum deviation due to electric currents 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.

KOCKUMS
MEKANISKA VERKSTADS AKTIEBOLAG

T. A. Johansson

Builder's Signature.

Date 11th Jan. 1937.

Is this installation a duplicate of a previous case *Yes, except* If so, state name of vessel *M/S "BRALANTA", Yard No. 191.*
air heaters.

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

The above described electrical equipment installation has been fitted onboard under survey in accordance with the Rules and instructions and has been tested and found satisfactory.

The workmanship and the materials are good.

Dated
K. H. G.
21/1/37.

Total Capacity of Generators *255* Kilowatts.

The amount of Fee ... *£ 684.77* When applied for, *12th Jan. 1937.*

Travelling Expenses (if any) £ : : *27. 1. 37* When received, *27/1.*

A. Sundén
Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRI 22 JAN 1937*

Assigned *See other F.E. rpt.*

W. H. Green
Refers



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