Rpt. 13.

No. 1597.

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office AUG 11 1937

Date of writing Report 9th Aug. 1937. When handed in at Local Office 9th Aug, 1937. Port of Malmö.

No. in Reg. Book. 28126 Survey held at Malmö Date, First Survey 4th June Last Survey 5th Aug, 1937. (Number of Visits 26)

on the Single Screw Motor Tanker "KONGSGAARD" Tons { Gross 9467 / Net 5677

Built at Malmö By whom built Kockums M.V.A.-B. Yard No. 196 When built 1937.

Owners Skibs a/s Solvang Port belonging to Stavanger

Electric Light Installation fitted by Kockums M.V.A.-B. Contract No. ✓ When fitted 1937

Is the Vessel fitted for carrying Petroleum in bulk Yes.

System of Distribution Two wire system

Pressure *of supply for* **Lighting** 110 / volts, ~~Heating~~ COOKING 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 ✓ *Have certificates of test results for machines under 100 kw. been submitted and approved* Not forwarded. *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 *Are the lubricating arrangements of the generators as per Rule* Yes ✓

Position of Generators Main:- One on each side at the fore end of the motor room. ~~auxiliary steam driven generator.~~ On 2nd deck, port side, in motor room, *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* 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 front of the motor room, 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 panel. ✓, *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* Clear space behind panel = 800 mm. See appr. 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 & reversed current trips & a single pole equaliser 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* 4 *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* Ohmmeters, 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*

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 or XI~~ *of the Rules* Yes (Metr. units)

If the cables are insulated otherwise than as per Rule, are they of an approved type ✓ **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* ✓, *or waterproof insulating tape* ✓ **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* Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit? lead covered & 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 ✓, *are the cap screws of brass* ✓, *are the cables run in 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 ✓ (& armoured)

Earthing Connections, *state what earthing connections are fitted and their respective sectional areas* ✓

, *are their connections made as per Rule* ✓.

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 ✓, *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* ✓.

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* ✓

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. ✓, *how are the cables led* 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 ✓, *whether fixed or portable* ✓, *are their fittings as per Rule* ✓.

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

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, as a rule. ✓ *situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type* ✓

, *if not of this type, state distance of the combustible material horizontally or vertically above the motors* ✓ *and* ✓

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing No motor over 100 H.P. ✓ **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* ✓ **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 ✓

Spare Gear, *if the vessel is for open sea service have spares been supplied as per Rule* Yes, and some motors & shafts in addition.

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT Kilowatts.	Volts.	Amperes.	Revs. per Min.	DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE. Fuel Used.	Flash Point of Fuel.
Main	2	2 - 100	220	2 - 455	350	Heavy oil engines	Heavy oil	Above 150° F.
Auxiliary ...	1	25	220	115	600	Steam engine		
Emergency ...								
Rotary Transformer	1	20	110	182	1500			

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS. No. per Pole.	Total Nominal Area per Pole Sq. ~~Ins.~~ mm.	COMPOSITION OF STRAND. No.	Diameter. mm.	TOTAL MAXIMUM CURRENT. AMPERES. Circuit.	Rule.	Approximate Length. (Lead and Return.) ~~Feet.~~ m.	Insulated with	HOW PROTECTED.
Main Generator	2	185	37	2.52	455	480	max. 17	Rubber	Lead covered & arm. with galv. steel tape.
Equaliser Connections ...		2 - 150	37	2.3	-	-	" 17	"	" "
Auxiliary Generator	1	70	19	2.51	115	125	46	"	" "
Emergency Generator ...									
Rotary Transformer { Motor ...	1	70	19	2.51	100	125 ✓	45	"	" "
Rotary Transformer { Generator...	1	150	37	2.2	182	200 ✓	30	"	" "
Engine Room... ... ... {	1	16	7	1.71	40	50 ✓		"	" "
Boiler Room... ... ... {									
Auxiliary Switchboards A.	1	50	19	1.83	85	100 ✓	176	"	" "
" " B	1	16	7	1.71	30	50 ✓	65	"	" "
" " C	1	16	7	1.71	30	50 ✓	72	"	" "
" " D	1	6	7	1.05	10	30 ✓	200	"	" "
Accommodation	1	1.5	7	0.52	max. 4	8 ✓	max. 40	"	Lead covered.
Wireless	1	16	7	1.71	-	-	167		
Searchlight SUEZ ...	1	35	7	2.53	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 ✓	20		
Poop Lights	1	1.5	7	0.52	0.6	8 ✓	245		
DECK ~~Cabin~~ Lights	1	1.5	7	0.52	max. 3.5	8 ✓	max. 110		
Arc Lamps									
Heaters COOKING ...	1	50	19	1.83	82	100 ✓	145		

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS. No. Per Pole.	Total Nominal Area per Pole Sq. Ins.	COMPOSITION OF STRAND. No.	Diameter.	TOTAL MAXIMUM CURRENT. AMPERES. In Circuit.	Rule.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
Ballast Pump										
Main Bilge Line Pumps ...	2	1	10	7	1.35	max. 34	66 ✓	max. 52	Rubber	Lead covered & arm. with galv. steel tape.
General Service Pump ...										
Emergency Bilge Pump ...										
Sanitary Pump										
Circ. Sea Water Pumps ...	2	1	70	19	2.51	112	125 ✓	max. 48	"	" "
Circ. ~~Fresh~~ SEA Water Pumps... for aux. engines	1	1	6	7	1.05	22	30 ✓	22	"	" "
Air Compressor CO_2...	1	1	16	7	1.71	40	50 ✓	84	"	" "
Fresh Water Pump	1	1	1.5	7	0.52	3.2	8 ✓	94	"	" "
Engine Turning Gear... ...	1	1	25	7	2.13	56	65 ✓	83	"	" "
Engine Reversing Gear ...										
Lubricating Oil Pumps ...	2	1	120	37	2.03	152	175 ✓	max. 58	"	" "
Oil Fuel Transfer Pump ...	1	1	4	7	0.86	16	20 ✓	66	"	" "
Cool. pump for ~~Windlass~~ refrig. machy.	1	1	1.5	7	0.52	3.2	8 ✓	60	"	" "
Winches, Forward ... ... Circ. pump	1	1	2.5	7	0.67	10	15 ✓	24	"	" "
Winches, Aft										
Steering Gear—										
(a) Motor Generator...										
(b) Main Motor	1	2	2.5	7	2.13	50	65 ✓	100	"	" "
Workshop Motor	1	1	2.5	7	0.67	12	15 ✓	70	"	" "
Ventilating Fans ...										
Lubr. oil separator	1	1	2.5	7	0.67	12	15 ✓	66	"	" "
" " heater	1	1	50	19	1.83	82	100 ✓	73	"	" "
Fuel oil separator	1	1	2.5	7	0.67	12	15 ✓	82	"	" "
" " heater	1	1	50	19	1.83	82	100 ✓	76	"	" "

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.

Nils B. Hansson Electrical Engineers. Date 9th Aug. 1937.

COMPASSES.

Distance between electric generators or motors and standard compass ....

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

The nearest cables to the compasses are as follows :—

A cable carrying .... *Ampères* .... *feet from standard compass* .... *feet from steering compass.*

A cable carrying .... *Ampères* .... *feet from standard compass* .... *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* .... *course in the case of the standard compass, and* 0 *degrees on* .... *course in the case of the steering compass.*

KOCKUMS
MEKANISKA VERKSTADS AKTIEBOLAG

L. Lundegård / L. M. T. Builder's Signature. Date 9th Aug. 1937.

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 above described electric installation has been installed onboard under my inspection and has been tested and found satisfactory.

The materials and the workmanship are both good.

All the Rule requirements have been complied with.

Noted
Ykm
16.8.37

Total Capacity of Generators 225 *Kilowatts.*

The amount of Fee Mrm. Kr. 704:80 / Gpm. Kr. 126:45 — When applied for, 9th Aug. 1937.

Travelling Expenses (if any) Gpm. Kr. :47:77 — When received. Kr 704.80 pd 23-9-37 / 19 .... Kr 74.22 pd 30/9/37 / 19 ....

Oslundén A. Börring.
Surveyor to Lloyd's Register of Shipping.

Committee's Minute TUE. 17 AUG 1937

Assigned See Rmo. F.6.1597

2m.5.34.—Transfer.

The Surveyors are requested not to write on or below the space for Committee's Minute.