

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

JAN 31 1939

Received at London Office

Date of writing Report 11 Sept 1938 When handed in at Local Office 13th Sept 1938 Port of Danzig
 No. in Survey held at Danzig Date, First Survey 22nd April Last Survey 25th January 1939
 Reg. Book. continued at Danzig 12.9.38.
 on the Steel Twin Screw Drag Suction Hopper Dredger "FU SHING" Tons

Gross	
Net	

 Built at Danzig By whom built F. Schichau G.m.b.H. Yard No. 1400 When built 1938
 Owners Whangpoo Conservancy Board Port belonging to Shanghai
 Electric Light Installation fitted by F. Schichau G.m.b.H. Contract No. 1400 When fitted 1938
 Is the Vessel fitted for carrying Petroleum in bulk no

System of Distribution 2 Wire parallel system with constant pressure

Pressure of supply for Lighting 220 Volt volts, Heating ✓ volts, Power 220 Volt/440 Volt volts.

Direct or Alternating Current, Lighting direct current Power direct current

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 certificates for generators under 100 kw. been supplied and approved 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 on raised platform in aft eng. room on starboard, 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 unprotected woodwork, 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 on second platform above generator platform.

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 unprotected woodwork 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

yes, accessibility of all parts yes, absence of fuses on back of board as approved, 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 For each Generator a circuit breaker with overload and reversed current trip and with a single pole equalizer switch. For each outgoing circuit a fuse on each pole and a double pole switch

Are turbine driven generators fitted with emergency trip switch as per rule to be fitted Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material fire res. material 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 a Voltmeter with 2 scales Volts & Ohms 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 are all fuses labelled as per rule 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 multivire single lead twin are the cables insulated and protected as per Tables IV, V, X, XI, XII or XHI 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 3.5 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 ✓, 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 yes are cables laid under machines or floorplates no if so, are they adequately protected ✓

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

Support and Protection of Cables, state how the cables are supported and protected by clamps and sheet iron casings

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

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 20 holding down bolts of 1/4" diam for each = 6000 mm². Diesel Genem. 6 bolts of 1" diam = 3000 mm² 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, 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 ✓ are they ventilated 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 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 ✓

where are the controlling switches situated ✓ are all fittings suitably ventilated ✓, 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 ✓, are air heaters constructed and fitted as per Rule ✓

Searchlight Lamps, No. of 1 whether fixed or portable fixed, 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 as far as possible 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 unprotected woodwork 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 yes have certificates for all motors for essential services been supplied and approved 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 ✓ **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 ✓ are all fuses of the filled cartridge type ✓ are they of an approved type ✓ If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed flameproof type approved for use in dangerous spaces ✓ **Spare Gear,** if the vessel is for open sea service have spares been supplied as per Rule yes are they suitably stored in dry situations yes

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amperes.	Rev. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	2	225	230	978	1500	Turbines		
AUXILIARY	1	25	230	65.2	1000	Diesel Engine	Diesel Oil	140° F.
EMERGENCY								
ROTARY TRANSFORMER	1	132	220/440	670	1500			

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	No. per Pole.	Total Nominal Area per Pole Sq. Ins.	COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.			Approximate Length (Lead and Return) Feet.	Insulated with	HOW PROTECTED.
			No.	Diameter.	In Circuit.	Rule.				
MAIN GENERATOR	3	1200	91	2.37	978	1182	20	rubber	Lead covered	
EQUALISER CONNECTIONS	3	1200	91	2.37			10			
AUXILIARY GENERATOR	1	35	19	1.53	65.2	77.5	30			
EMERGENCY GENERATOR										
ROTARY TRANSFORMER MOTOR GENERATOR	1	500	91	2.65	670	804	20			
ENGINE ROOM	1	150	61	1.77	260	280	30			
BOILER ROOM	1	10	19	0.82	32	38	40			
AUXILIARY SWITCHBOARDS										
Pumping Eng. Room	1	10	19	0.82	32	38	20			
Wash Room	1	6	19	0.64	26	30	80			
Work shop	1	6	19	0.64	29	30	250			
Accommodation Poop	1	16	19	1.04	43	49	250			
Upper deck	1	16	19	1.04	40	49	200			
Fore castle deck	1	4	19	0.52	14	22	250			
Operation room	1	4	19	0.52	12	22	230			
WIRELESS	1	16	19	1.04		49	250			
SEARCHLIGHT	1	16	19	1.04	40	49	250			
MASTHEAD LIGHT	1	15	1	1.38	1	9	200			
SIDE LIGHTS	1	15	1	1.38	1	9	30			
COMPASS LIGHTS	1	15	1	1.38	1	9	20			
POOP LIGHTS	1	15	1	1.38	1	9	200			
CARGO LIGHTS										
HEATERS										

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	No. Per Pole.	Total Nominal Area per Pole Sq. Ins.	COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.			Approximate Length (Lead and Return) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.	In Circuit.	Rule.				
BALLAST PUMP											
MAIN BILGE LINE PUMPS											
GENERAL SERVICE PUMP											
EMERGENCY BILGE PUMP											
SANITARY PUMP											
CIRC. SEA WATER PUMPS	2	1	2.5	1	1.78	12	15	40	rubber lead covered and	For 200000	
CIRC. FRESH WATER PUMPS	2	1	2.5	1	1.78	9.5	15	40		Options, automatic	
AIR COMPRESSOR											
FRESH WATER PUMP											
ENGINE TURNING GEAR											
ENGINE REVERSING GEAR											
LUBRICATING OIL PUMPS											
OIL FUEL TRANSFER PUMP											
WINDLASS	1	1	70	37	1.55	100	154	140			
WINCHES, FORWARD	1	1	50	19	1.83	119	119	120			
WINCHES, AFT	2	1	150	61	1.77	184	280	120			
Coal Winches	2	1	10	19	0.82	32	38	200			
STEERING GEAR											
(a) MOTOR GENERATOR	1	1	50	19	1.83	119	119	120			
(b) MAIN MOTOR	1	1	80	19	1.83	84	119	40			
WORKSHOP MOTOR	1	1	4	19	0.52	19	22	80			
VENTILATING FANS											
Stoker Motors	4	1	10	19	0.82	25	38	80			
Capstans	4	1	50	19	1.83	119	119	50			
Forced draught fans	2	1	120	61	1.87	134	177	120			
Induced	2	1	50	19	1.83	105	105	105			
Suction ladder hoisting											
Winch	1	1	150	61	1.77	260	280	150			
Flushing Pump	1	2	80	91	2.37	780/585	788	240			

The Electrical Equipment is installed in accordance with the approved plans.

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

The foregoing is a correct description.

F. Schichau G. m. b. H. Elbing
Abt. Schiffswerft zu Danzig

Tomburg *Mumm*

Electrical Engineers.

Date

COMPASSES.

Minimum distance between electric generators or motors and standard compass 15 m.

Minimum distance between electric generators or motors and steering compass 15 m.

The nearest cables to the compasses are as follows:—

A cable carrying 9.5 Ampères 6 feet from standard compass 6 feet from steering compass.

A cable carrying 40 Ampères 15 feet from standard compass 15 feet from steering compass.

A cable carrying 3.5 Ampères — feet from standard compass 15 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

The maximum deviation due to electric currents was found to be -5 degrees on NW course in the case of the standard

compass, and -3 degrees on N.W. course in the case of the steering compass.

F. Schichau G. m. b. H. Elbing
Abt. Schiffswerft zu Danzig

Tomburg *Mumm*

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 electrical equipment of this

vessel was surveyed during installation on board by the Society's surveyor and was found to comply with the Rules of Lloyd's Register in every respect and is in accordance with the approved plans. The workmanship is of best quality. After completion the insulation resistance of the whole plant was tested by applying a direct-current of 500 Volts, the result was found to be satisfactory. All generators and motors have been tested under full working conditions, main switches and current breakers operated, and all parts were found working satisfactory.

The electrical equipment of this vessel is in my opinion eligible to be classed in the Society's Register Book with record.

+ L. M. C. with date To be assigned by the Committee for whose consideration this Report is forwarded as per London letter of the 21st Jan 1939 (5) The following items remain to be completed.

Over-speed trips to be fitted to the D.C. turbo generators, + tested on completion. Turbine of 3rd generator to be fitted on board and tested on completion.

Total Capacity of Generators 465 Kilowatts.

1/56 Bremen
The amount of Fee ... £ 93-0-0
Travelling Expenses (if any) £ 14-0-0
to Bremen

When applied for, 6.12.1938
When received, 21.12.1938

Wied J.J.
24/2/39

noted
J.M. Munnell
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE 28 FEB 1939

Assigned

See Log J.C. 154

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



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