Rpt. 18. No. 21939

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

15 JUN 1936

Received at London Office

Date of writing Report 6th June 1936 When handed in at Local Office ..... 19 .... Port of Hamburg.

No. in Reg. Book. ..... Survey held at Hamburg Date, First Survey 31st March Last Survey 20th May 1936 (Number of Visits 9)

on the Steel Sc. "TARON" (Oil Eng.) Tons Gross 8054. Net 4756

Built at Hamburg By whom built Deutsche Werft A.G. Yard No. 169 When built 1936.

Owners Sarawak Oilfields Comp. Port belonging to Miri.

Electric Light Installation fitted by Angemeine Electrizitäts-Ges. Hamburg Contract No. /. When fitted 1936.

Is the Vessel fitted for carrying Petroleum in bulk yes.

System of Distribution Two wire; two conductor system.

Pressure of supply for **Lighting** 110 ✓ volts, **Heating** ✓ volts, **Power** 110 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 no, is an adjustable regulating resistance fitted in series with each shunt field ✓ Have certificates of test results for machines under 100 kw. been submitted and approved Certificates attached 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 Are the lubricating arrangements of the generators as per Rule yes

Position of Generators In main engine room; starb. side, 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 main engine room; starb. side.

✓ 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 placed in the same compartment.

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 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 micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework ✓, 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 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 no **Main Switchgear,** description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches For each Generator a double pole linked switch and a fuse on each pole; for each outgoing circuit a double pole changeover 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 2 ammeters 2 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 Earth testing lamps on each pole **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 & multicore *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 ✓ **Fall of Pressure,** *state maximum between bus bars and any point of the installation under maximum load* about 3 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* no paper insulated cables, *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 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* Cables on deck and under neath bridge in hose room in galvanized steel tubes; Cables in Engine and Boiler Room in galv. steel tube, latter insulated with asbestos.
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* in watertight strong 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* For wire, Two conductor system.
, *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* none
✓

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 yes, lower bridge deck, pump rooms; gas tight lamps, strongly protected, *how are the cables led* led in gas tight tubing.
where are the controlling switches situated Foreship - in upper bridge deck, otherwise from Eng.-Room.
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* none, *are air heaters constructed and fitted as per Rule* ✓

Searchlight Lamps, No. of Only connection for Suez Channel Lamps *whether fixed or portable* portable, *are their fittings as per Rule* yes.

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, *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* ✓
✓, *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* ✓ **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 bozes, 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 Kilowatts.	Volts.	Ampères.	Revs. per Min.	DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE. Fuel Used.	Flash Point of Fuel.
Main ..I...	1	16	115	139	390	Steam Engine	✓	✓
Auxiliary II...	1	16	115	139	390	Heavy Oil Engine	Diesel Oil	above 150° F.
Emergency ...								
Rotary Transformer								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS. No. per Pole.	CONDUCTORS. Total Nominal Area per Pole Sq. Inches/mm²	COMPOSITION OF STRAND. No.	COMPOSITION OF STRAND. Diameter.	TOTAL MAXIMUM CURRENT. AMPÈRES. Circuit.	TOTAL MAXIMUM CURRENT. AMPÈRES. Rule.	Approximate Length. (Lead and Return.) Feet. m	Insulated with	HOW PROTECTED.
Main Generator ... ...I...	1	95	37	1.81	139	151.6	12	Rubber	Lead covered and armoured.
Equaliser Connections ...									
Auxiliary Generator...II...	1	95	37	1.81	139	151.6	11	"	"
~~Emergency Generator~~ Spare Connection ...	1	95	37	1.81	139	151.6	67.	"	"
Rotary Transformer { Motor ... / Generator...									
Engine Room { Sub.-Distr. Bd.							F = 354		
Boiler Room { Main.-L.+M...	1	16	19	1.04	6.2	49.0	M = 20	"	"
Auxiliary Switchboards ...									
No 1. Upp. dk. aft ship	1	10	19	0.82	21.0	38.1	68	"	"
No 2. Bridge dk. M. Brg.	1	16	19	1.04	30.0	49.0	200	"	"
No 3+4. Eng.+Boil. Room.	1	6	19	0.04	7.5	28.7	104	"	"
Wor Kshop	1	35	19	1.53	75.0	77.7	90	"	"
a-T+6.	1	2.5	1	1.78	5.6	15.5	a=50; T+6=28.	"	"
~~Accomodation~~ B.+D ...	1	2.5	1	1.78	7.5	15.5	B=35; D=24.	"	"
From 1a-U+V	1	2.5	1	1.78	3.6	15.5	U=24; V=20.	"	"
G; H; J.	1	2.5	1	1.78	4.5	15.5	G=8; H=6; J=18	"	"
E; F; K.	1	10.0	19	0.82	11.0	38.1	E=101; EF=14; FK=138	"	"
Main-to- N	1	16.0	19	1.04	17.0	49.0	218.	"	"
Wireless	1	16.0	19	1.04	44.0	49.0	109.	"	"
Searchlight Cam. for Suez...	1	35.0	19	1.53	45.0	77.7	368.	"	"
Masthead Light Fore & Aft...	1	1.5	1	1.38	0.37	9.4	Fore 130 Aft 230	"	"
Side Lights	1	1.5	1	1.38	0.2	9.4	25	"	"
Compass Lights	1	1.5	1	1.38	0.2	9.4	12.	"	"
Poop Lights	1	1.5	1	1.38	0.07	9.4	238.	"	"
~~Deck~~ Cargo Lights Fore ship...	1	1.5	1	1.38	2.6	9.4	116	"	"
~~Deck~~ Arc ~~Lamps~~ Aft ship...	1	1.5	1	1.38	2.6	9.4	110	"	"
Heaters									

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS. No. Per Pole.	CONDUCTORS. Total Nominal Area per Pole Sq. Inches/mm²	COMPOSITION OF STRAND. No.	COMPOSITION OF STRAND. Diameter.	TOTAL MAXIMUM CURRENT. AMPERES. In Circuit.	TOTAL MAXIMUM CURRENT. AMPERES. Rule.	Approximate Length. (Lead and Return.) Feet. m.	Insulated with	HOW PROTECTED.
Ballast Pump			mm²		mm			m.		
Main Bilge Line Pumps ...										
General Service Pump ...										
Emergency Bilge Pump ...										
Sanitary Pump										
Circ. Sea Water Pumps ...										
Circ. Fresh Water Pumps...										
Air Compressor										
Fresh Water Pump										
Engine Turning Gear... ...	1	1	50.0	19	1.83	122	98.3	33	Rubber	Lead covered and armoured.
Engine Reversing Gear ...										
Lubricating Oil Pumps ...										
Small Oil Fuel Transfer Pump ...	1	1	4.0	19	0.52	17.8	22.1	204	"	"
Windlass										
Winches, Forward										
Winches, Aft										
Steering Gear—										
(a) Motor Generator...										
(b) Main Motor										
Workshop Motor										
Ventilating Fans for erew.	1	1	4.0	19	0.52	6.8	22.1	44	"	"
Oil separator	1	1	4.0	19	0.52	17.5	22.1	24.	"	"
Grinding machine	1	1	6.0	19	0.64	17.9	28.7	36.	"	"
Large	1	1	4.0	19	0.52	13.0	22.1	34.	"	"
Drilling machine	1	1	4.0	19	0.52	17.0	22.1	32.	"	"
Starting up Pump for Donkey Boiler	1	1	1.5	1	1.38	6.2	9.4	8	"	"

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.

ALLGEMEINE ELEKTRICITÄTS-GESELLSCHAFT
ABT. f. SCHIFFBAU
BAUBUREAU HAMBURG

Schiffer — Electrical Engineers. Date 9.6.36.

COMPASSES.

Distance between electric generators or motors and standard compass 15 m.

Distance between electric generators or motors and steering compass 20 m.

The nearest cables to the compasses are as follows :—

A cable carrying 0.2 Ampères 2 feet from standard compass 2 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 nil degrees on nil course in the case of the standard compass, and nil degrees on am. course in the case of the steering compass.

DEUTSCHE WERFT
AKTIENGESELLSCHAFT

Builder's Signature. Date 10/6/36.

Is this installation a duplicate of a previous case yes If so, state name of vessel Genoa.

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

This Electric Installation has been fitted in accordance with the approved plans, the Secretary's letters and in conformity with the requirements of the Rules.
The materials used and the workmanship are of good quality.
Regarding conductors the German Standards have been applied generally. The whole installation has been tested under working condition and was found i order.

Noted.
L.Y.
17/6/36.

Total Capacity of Generators 32. Kilowatts.

The amount of Fee ... ... RM 460.00 — When applied for, 2nd June 36

Travelling Expenses (if any) £ —:— — When received. 6.7.36

617

W. Ancier.
Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 19 JUN 1936

Assigned See other T.E. Rpt Ham 21939

2m,5,34.—Transfer. The Surveyors are requested not to write on or below the space for Committee's Minute.