

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

MAY -1 1937

Received at London Office

Date of writing Report 21<sup>st</sup> April 1937 When handed in at Local Office 19 Port of Hamburg  
 No. in Survey held at Hamburg Date, First Survey 4<sup>th</sup> March, 1937 Last Survey 15<sup>th</sup> April 1937  
 Reg. Book. on the Tm. Se. "Inera Granada" (Number of Vols. 8)  
 Tons { Gross 9968  
 Net 5782  
 Built at Hamburg By whom built Deutsche Werke A.G. Yard No. 181 When built 1937  
 Owners The Texas Company Norway A/S Port belonging to Oslo  
 Electric Light Installation fitted by Allgemeine Elektrizitäts Ges. Contract No. - When fitted 1937  
 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 110 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 yes Have certificates of test results for machines under 100 kw. been submitted and approved please find 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 Engine room floor, port forward side, driven by steam eng., 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 on port side of transverse bulkhead at fore end of eng. room floor 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 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 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 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 outgoing circuit: A double pole change over switch and a fuse on each pole.  
 For each generator: A circuit breaker with overload 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 2 ammeters 2  
 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  
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. — **Joint Boxes, Section and Distribution Boards, is the** construction, protection, insulation, material, and position of these as per rule yes, the German Standards have been applied, **Cables:** single, twin, or multicore are the cables insulated and protected as per Tables IV, V, VI of the Rules generally 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. Power 3, 1 Volt, Lighting 2, 4 Volt 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 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 clipped on galvanised sheet iron cable runs, and where necessary wholly inclosed in galvanised iron casing or tubes 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 water- and gas tight 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 and wood bushes **Earthing Connections,** state what earthing connections are fitted and their respective sectional areas — (Two wire 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 — **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 - in wheel house has each navigation lamp an automatic indicator as per Rule yes **Secondary Batteries,** are they constructed and fitted as per Rule yes for wireless only **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 — gas tight fitted are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected strongly protected glass lenses in pump rooms in gas tight tubing where are the controlling switches situated Bridge deck 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 — **Searchlight Lamps, No. of 1 (incandescent lamps),** whether fixed or portable fixed on bridge deck 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 steel masts **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 **Life Appliances** 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

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	each 20	115	each 175	400	1 cyl. reciproc. steam eng.	—	—	
AUXILIARY									
EMERGENCY									
ROTARY TRANSFORMER									
GENERATOR, LIGHTING AND HEATING CONDUCTORS.									
DESCRIPTION.	No. per Pole.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet.	HOW PROTECTED.
		No. per Pole.	Total Nominal Area per Pole Sq. In.	No.	Diameter.	In Circuit.	Rule.		
MAIN GENERATOR	1	120	61	1,89	174	177.2	34+30		
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR									
EMERGENCY GENERATOR									
ROTARY TRANSFORMER									
ENGINE ROOM									
BOILER ROOM									
AUXILIARY SWITCHBOARDS	1	95	37	1,81	60	151.6	15		
	1	95	37	1,81	80	172			
	1	50	19	1,83	35	98.3	22		
	1	50	19	1,83	35	96			
	X	Please see note below							
	1	50	19	1,83	80	98.3	68		
	1	95	37	1,81	106	151.6	58		
	1	50	19	1,83	88	98.3	20		
Shore connection	1	70	37	1,55	100	123.7	94		
WIRELESS	1	25	19	1,3	68	63.2	200		
SEARCHLIGHT	1	2.5	1	1,78	15	15.5	11		
MASTHEAD LIGHT	1	1.5	1	1,38	0.5	9.4	160/144		
SIDE LIGHTS	1	1.5	1	1,38	0.5	9.4	160/144		
COMPASS LIGHTS	1	1.5	1	1,38	0.2	9.4	9		
POOP LIGHTS	1	1.5	1	1,38	0.5	9.4	258		
CARGO LIGHTS									
ARC LAMPS									
HEATERS	2	2.5	1	1,78	115	15.5	8-26		
Heated Cupboards	1	15	19	0.82	39	38.1	18		
MOTOR CONDUCTORS.									
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length. (Lead and Return.) Feet.	HOW PROTECTED.
		No. per Pole.	Total Nominal Area per Pole Sq. In.	No.	Diameter.	In Circuit.	Rule.		
La. Work boiler circulator pumps	2	1	6	19	0.64	25.6	29.7	35/37	
lubricating oil pump	1	1	6	19	0.64	25.6	28.7	6.5	
Fuel oil pump	1	1	6	19	0.64	25.6	28.7	6	
EMERGENCY BILGE PUMP									
SANITARY PUMP	1	1	4	19	0.52	17.6	22.1	40	
CIRC. SEA WATER PUMPS	1	1	6	19	0.64	25.6	28.7	52	
CIRC. FRESH WATER PUMPS									
AIR COMPRESSOR									
FRESH WATER PUMP	1	1	4	19	0.52	17.6	22.1	53	
ENGINE TURNING GEAR	2	1	25	19	1.3	67	63.2	22/26	
ENGINE REVERSING GEAR									
LUBRICATING OIL PUMPS									
OIL FUEL TRANSFER PUMP									
WINDLASS									
WINCHES, FORWARD									
Cooling water pumps	2	1	25	19	1.3	41	63.2	42	
WINCHES, AFT									
Landing mach.	1	1	2.5	1	1,78	12	15.5	46	
STEERING GEAR									
(a) MOTOR GENERATOR									
(b) MAIN MOTOR									
WORKSHOP MOTOR									
VENTILATING FANS	2	2	2.5	1	1,78	12	15.5	65	
Have blower	1	1	1.5	1	1,38	3.5	9.4	7	
Lathe	1	1	4	19	0.52	17.6	22.1	17	
Drilling mach.	1	1	4	19	0.52	17.6	22.1	21	
Grinding stone	1	2	1.5	1	1,38	4	9.4	5	



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  
ABTEILUNG SCHIFFBAU

Electrical Engineers.

Date 18. April 1937

#### COMPASSES.

Distance between electric generators or motors and standard compass about 12 m } double wired  
Distance between electric generators or motors and steering compass about 11 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 nil course in the case of the steering compass.

DEUTSCHE WERFT  
AKTIENGESELLSCHAFT

Builder's Signature.

Date

Is this installation a duplicate of a previous case? If so, state name of vessel

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

this Electric Installation are of good quality. As the conductors used are of the German Standard the Society's Rules regarding to conductors have been applied generally. The installation has been fitted under Special Survey in accordance with the approved plans, the Secretary's Letter and otherwise in compliance with the requirements of the Rules, and is eligible in my opinion to be classed in the Society's Reg. Book.

Notes x At request of the Captain this distribution switch-board No 5 has been dispensed with and two circuits of 1.5 sq. mm for the fore ship have been connected up to subdistribution board of No. 2 distr. board.

+ Square areas of conductors have been increased to meet requirements of the Rules for additional supply of current for pumps (marked v) and accommodation fans, ordered by the Owners during outfit

Total Capacity of Generators 40 Kilowatts.

The amount of Fee ... £ R M : 500 : 26.49.37

Travelling Expenses (if any) £ — : — : 27.5.37

Committee's Minute

Assigned

MAY 7 1937

See Ham. 76 22304

Friedrich H. Röhrs  
Surveyor to Lloyd's Register of Shipping.



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Lloyd's Register  
Foundation