

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

DEC 29 1938

Received at London Office

Date of writing Report 23-12-1938 When handed in at Local Office

Port of Rotterdam

No. in Survey held at Schiedam.

Date, First Survey 10-10-38 Last Survey 20-12-1938

Reg. Book.

(Number of Visits.....5.....)

on the m.s. "CRISTA"

Gross 2590.05

Net 1405.92

Built at Schiedam

By whom built N.V. Werf "Gusto"

Yard No. 726

When built 1938

Owners The Anglo-Saxon Petroleum Company Ltd. Port belonging to London

Electric Light Installation fitted by N.V. Handelscompagnie

Contract No.

When fitted 1938

Is the Vessel fitted for carrying Petroleum in bulk Yes (case oil)

System of Distribution two conductor insulated 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 yes Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing

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 in engineroom, starboard 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 engineroom, starboard 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

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 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 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 main generator and each outgoing circuit: one double pole change over switch &amp; one set of double pole fuses.

for auxiliary generator: one double pole switch &amp; one set of double pole fuses.

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

voltage meters 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

one pair of earth fault indicating lamps for each generator circuit 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. ✓ 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 multicore *all types* are the cables insulated and protected as per Tables IV, V, X, XI, XII or XIII 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 *2.6 Volts (Lighting)* **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 *yes* if so, are they adequately protected *yes*

Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit *yes* *cables are clipped to metal trays or direct to steelwork or woodwork of vessel or run in conduit*

**Support and Protection of Cables,** state how the cables are supported and protected *woodwork of vessel or run in conduit*

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*

**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 *Lead sheath & steel wire braiding of cables and all apparatus earthed where necessary to Rule requirements* 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 *yes* (telephone) are they ventilated 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, the Wigan-fittings are provided with stout prismatic glass lenses; these lights are switched off at sea.* are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected *pumprooms are lighted by fittings in special gastight boxes with stout glass discs; these boxes are in the pumproom entrances, how are the cables led the wiring is drawn in conduit wholly outside the pumprooms.* where are the controlling switches situated *in Chart 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 ✓, are air heaters constructed and fitted as per Rule ✓

**Searchlight Lamps, No. of** ✓ whether fixed or portable ✓, 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* where 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 ✓, 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 ✓ have certificates for all motors for essential services been supplied and approved ✓ **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 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.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.	
MAIN ... ..	1	16	110	145	390	steam engine	✓	✓	
AUXILIARY ... ..	1	16	110	145	390	diesel engine	diesel oil	above 150°F.	
EMERGENCY ... ..									
ROTARY TRANSFORMER									

GENERATOR, LIGHTING AND HEATING CONDUCTORS.									
DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole Sq. mm. m.m.	No.	Diameter. m.m.	Circuit.	Rule.			
MAIN GENERATOR ... ..	1	95	19	2.53	145	150	90	rubber	Lead sheath & steel wire braiding
EQUALISER CONNECTIONS ... ..									
AUXILIARY GENERATOR ... ..	1	95	19	2.53	145	150	54	"	"
Shore connection	1	95	19	2.53	-	150	150	"	"
Emergency Generator									
ROTARY TRANSFORMER } MOTOR									
TRANSFORMER } GENERATOR...									
ENGINE ROOM... ..	1	16	7	1.71	30	49	30	"	"
BOILER ROOM... ..									
AUXILIARY SWITCHBOARDS ... ..									
Workshop motors dist. brd.	1	25	7	2.13	57	63	150	"	"
Portable Lights dist. brd.	1	10	7	1.35	18	38	110	"	"
Navigation board	1	10	7	1.35	10	38	420	"	"
Portable lights subdist. brd.	1	6	7	1.05	10	29	240	"	"
4 eng. rm. lighting sub. dist. brds.	1	6	7	1.05	11	29	100	"	"
ACCOMMODATION ... ..									
Lighting dist. brd. Aft	1	16	7	1.71	38	49	120	"	"
" " bridge deck	1	16	7	1.71	35	49	360	"	"
" " fore ship	1	10	7	1.35	6.5	38	720	"	"
10 lighting subdist. brds.	1	6	7	1.05	9.5	29	60	"	"
WIRELESS ... ..	1	10	7	1.35	32	38	450	"	"
SEARCHLIGHT ... ..									
MASTHEAD LIGHT ... ..	1	1.5	1	1.39	.4	9.5	300 - 300	"	"
SIDE LIGHTS ... ..	1	1.5	1	1.39	.4	9.5	120 - 120	"	"
COMPASS LIGHTS ... ..	1	1.5	1	1.39	.4	9.5	60 - 90	"	"
POOP LIGHTS ... ..	1	1.5	1	1.39	.4	9.5	480	"	"
CARGO LIGHTS ... ..	1	1.5	1	1.39	2	9.5	240	"	"
HEATERS ... ..									

MOTOR CONDUCTORS.										
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Nominal Area per Pole Sq. mm. m.m.	No.	Diameter. m.m.	In Circuit.	Rule.			
BALLAST PUMP ... ..										
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	25	7	2.13	50	63	120	rubber	Lead sheath & steel wire braiding
ENGINE REVERSING GEAR ... ..										
LUBRICATING OIL PUMPS ... ..										
OIL FUEL TRANSFER PUMP... ..	1	1	6	7	1.05	17	29	60	"	"
WINDLASS ... ..										
WINCHES, FORWARD ... ..										
WINCHES, AFT ... ..										
STEERING GEAR—										
(a) MOTOR GENERATOR...										
(b) MAIN MOTOR ... ..										
WORKSHOP MOTOR ... ..										
VENTILATING FANS ... ..	1	1	6	7	1.05	10.8	29	50	"	"
Oil separator	1	1	6	7	1.05	18	29	60	"	"
Grindstone	1	1	6	7	1.05	16.8	29	60	"	"
Drilling machine	1	1	6	7	1.05	17.7	29	90	"	"
Lathe	1	1	6	7	1.05	24.5	29	50	"	"



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.

N.V. HANDELSCOMPAGNIE  
ELECTRO-TECHNISCHE AFDELING

Electrical Engineers.

Date 27/12 - 1938

#### COMPASSES.

Minimum distance between electric generators or motors and standard compass 27 feet (wireless motor-generator)

Minimum distance between electric generators or motors and steering compass 31 feet ( " " " )

The nearest cables to the compasses are as follows:—

A cable carrying 1 Ampères 1 foot from standard compass 1 foot from steering compass. (compass light)

A cable carrying 4 Ampères 3 feet from standard compass 3 feet from steering compass. (lighting steering house).

A cable carrying 17 Ampères 27 feet from standard compass 21 feet from steering compass. (wireless station)

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 nihil degrees on every course in the case of the standard compass, and nihil degrees on every course in the case of the steering compass.

Builder's Signature Date

N.V. WERF GUSTO

v/h Fa. A. F. SMULDERS

Rechtsd. Raad van Beheer

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, etc.)

The electrical equipment of this vessel has been fitted on board under special survey, tested under full working conditions and found satisfactory. The material and workmanship are good and the installation merits in my opinion the Committee's approval.

Noted  
L.H.  
2/1/39.

Total Capacity of Generators 32 Kilowatts.

The amount of Fee ... £ 276.00 : When applied for, 27.12.1938

Travelling Expenses (if any) £ 8.00 : When received, 24.1.1939

H. van der Wijk.

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI 6 JAN 1939

Assigned

See FE machy rpt.



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Foundation