

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 20 JUL 1942

Date of writing Report 15th June, 1942 When handed in at Local Office 23rd June, 1942 Port of Baltimore, Maryland

No. in Survey held at Baltimore, Maryland Date, First Survey 19th Dec. 1941 Last Survey 9th May, 1942 (Number of Visits 10)

Reg. Book. on the S.S. "COLINA" Tons { Gross 9930 Net 5907

Built at Sparrows Point, Md. By whom built Bethlehem Yard No. 4358 When built 1942

Owners Socony-Vacuum Oil Co. Port belonging to New York, N. Y.

Electric Light Installation fitted by Bethlehem Steel Co. (Shipbuilding Division) Contract No. 4358 When fitted 1942

Is the Vessel fitted for carrying Petroleum in bulk Yes

System of Distribution 3.2.2 wire

Pressure of supply for Lighting 120 V volts, Heating - volts, Power 240 V volts.

Direct or Alternating Current, Lighting D.C. Power D.C.

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. (Per A.I.E.E. #45), 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 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

Position of Generators On Generator Flat 23' 9" above base line, on Port Side of ship, 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 Athwartship, on generator flat. (1) on Ford. End, (1) on After End.

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 Yes

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 Normal, individual fuses to voltmeter, pilot or earth lamp Yes, are moving parts of switches alive in the "off" position No

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 Each generator has 2-pole air circuit breaker and 3-pole disconnect knife switch. Equalizer taken from each generator to center blade of knife sw. Each outgoing circuit has fused knife sw. or air circuit breaker.

Are turbine driven generators fitted with emergency trip switch as per rule Yes

Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material Steel Encl. Instruments on main switchboard 3 ammeters 2

voltmeters 0 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 Yes

Earth 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



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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 **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** **240 volt bus - - - 8,8 volts** **120 volt bus - - - 2,8 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 **Yes**, 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** **Steel Hangers**

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** **(As per A.I.E.E. #45)**

**Joints in Cables, state if any, and how made, insulated, and protected** **None**

**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** **-** state the material of which the bushes are made **-**

**Earthing Connections, state what earthing connections are fitted and their respective sectional areas** **None**

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** **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 **None**

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**

**Explosion proof fittings amidship center castle space** **-** how are the cables led **-**

**Directly to the fixtures**

where are the controlling switches situated **Outside the space**

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** **Yes**, 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 **A.I.E.E. #45**

**Are 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 **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** **None** **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 **A.I.E.E.** 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 **None Supplied**

**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.		DRIVEN BY	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.		
MAIN	2	300	240	1250	1200	Steam Turbine				
AUXILIARY	1	50	240	208	3600	" "				
ROTARY TRANSFORMER	3	25	120	208	1750	40 HP 230 V Motor				
		15	15	1000	1200	25 HP 230 V Motor				
GENERATOR, LIGHTING AND HEATING CONDUCTORS.										
DESCRIPTION.	No. per Pole.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length (Lead and Return) Feet.	Insulated with	HOW PROTECTED.
		Total Nominal Area per Pole sq. in.	No.	Wires	Strands	In Circuit.	Rate.			
MAIN GENERATOR	4	500 M	37	116.2	1250	1776	60	Var. Camb.	A.C.B. @ 1560 A	240 Volts D. C.
EQUALISER CONNECTIONS	2	500 M	37	116.2	-	888	60	"	"	
AUXILIARY GENERATOR	1	250 M	37	82.2	208	280	90	"	A.C.B. @ 260 A	120-V D.C.
ROTARY TRANSFORMER MOTOR	1	133 M	19	83.7	144	184	80	"	Fuse 175 A	
ROTARY TRANSFORMER GENERATOR	1	250 M	37	82.2	208	280	85	"	A.C.B. @ 260 A	
ENGINE ROOM	1	83,700	19	66.4	78	134	95	"	Fuse 100 A	
BOILER ROOM	1	83,700	19	66.4	78	134	95	"	Fuse 100 A	
Distribution Panels for Accum. Ltg.										
1 Navigating Lts.	1	10,400	7	38.5	3	25.5	610	"	Fuse 25 A	
2 Poop Quarters	1	133 M	19	83.7	135	184	185	"	Fuse 175 A	
3 Center Castle Qts.	1	212 M	19	105.5	88	251	626	"	Fuse 150 A	
4 Pump Room Lts. (Upper)	1	6,530	7	30.5	5.7	18.5	200	"	Fuse 15 A	
" " (Lower)	1	6,530	7	30.5	5.2	18.5	120	"	Fuse 15 A	
5 Forele Lts.	1	41,700	7	77.2	10.2	84	900	"	Fuse 30 A	
WIRELESS	1	52,600	7	86.7	15	74	660	"	Fuse 30 A	
SEARCHLIGHT (Br. of #3 above)	1	6,530	7	30.5	8.7	18.5	90	"	Fuse 15 A	
MASTHEAD LIGHT	1	4,110	7	24.2	.44	13	300	Rubber	Fuse 3 A	
SIDE LIGHTS	1	4,110	7	24.2	.44	13	100	"	Fuse 3 A	
COMPASS LIGHTS	1	4,110	7	24.2	.44	13	40	"	Fuse 10 A	
POOP LIGHTS	See Poop Qts. (#2) above									
CARGO LIGHTS	1	66,400	7	97.4	27	83	430	Var. Camb.	Fuse 50 A	
SEARCHLIGHT	1	33,100	7	68.8	10	54.5	620	"	Fuse 30 A	
1 D.G. Motors	1	83,700	19	66.4	92	134	150	"	Fuse 200 A	
2 D.G. Motors	1	300,000	37	90	184	316	150	"	A.C.B. @ 450 A	
MOTOR CONDUCTORS.										
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		Approximate Length (Lead and Return) Feet.	Insulated with	HOW PROTECTED.
		Total Nominal Area per Pole sq. in.	No.	Wires	Strands	In Circuit.	Rate.			
FORCED DRAFT BLOWERS	2	1	133 M	19	83.7	132	184	220	Var. Camb.	Fuse 175 A
MAIN BILGE LINE PUMPS	1	1	33,100	7	68.8	38	54.5	120	"	Fuse 50 A
FIRE & BUTTERWORTH PUMP	1	1	500 M	37	116.2	302	444	100	"	A.C.B. @ 880 A
MAIN CONDENSATE PUMP	2	1	52,600	7	86.7	56.5	74	140	"	Fuse 70 A
ENGINE ROOM BILGE PUMP	1	1	16,500	7	48.6	20	34.5	110	"	Fuse 30 A
SANITARY PUMP	1	1	16,500	7	48.6	20	34.5	100	"	Fuse 30 A
CIRC. SEA WATER PUMPS	1	2	500 M	37	116.2	625	888	124	"	A.C.B. @ 800 A
SALT WATER SER. PUMP	1	1	16,500	7	48.6	20	34.5	100	"	Fuse 30 A
CIRC. FRESH WATER PUMPS	1	1	16,500	7	48.6	20	34.5	100	"	Fuse 30 A
AIR COMPRESSOR	1	1	52,600	7	86.7	55	74	70	"	Fuse 70 A
POTABLE FRESH WATER PUMP	1	1	6,530	7	30.5	4.6	18.5	116	"	Fuse 15 A
ENGINE TURNING GEAR	1	1	33,100	7	68.8	38	54.5	190	"	Fuse 50 A
AUXIL. CIRCUL. PUMP	1	1	33,100	7	68.8	38	54.5	60	"	Fuse 50 A
ENGINE REVERSING GEAR	1	1	33,100	7	68.8	38	54.5	60	"	Fuse 50 A
LUBRICATING OIL PUMPS	2	1	83,700	19	66.4	92	134	160	"	Fuse 125 A
OIL FUEL TRANSFER PUMP	1	1	133 M	19	83.7	144	184	188	"	Fuse 175 A
OIL FUEL SER. PUMP	2	1	33,100	7	68.8	38	54.5	160	"	Fuse 50 A
AUXIL. CONDENSATE PUMP	1	1	26,300	7	61.2	30	46.5	70	"	Fuse 45 A
WATERERS FORWARD	1	1	16,500	7	48.6	20	34.5	160	"	Fuse 30 A
REFRIGERATOR COMPRESSOR	1	1	16,500	7	48.6	20	34.5	160	"	Fuse 30 A
EVAPORATOR FEED PUMP	1	1	6,530	7	30.5	4.6	18.5	146	"	Fuse 15 A
WATERERS AFT	1	1	6,530	7	30.5	4.6	18.5	190	"	Fuse 15 A
WASH WATER PUMP	1	1	6,530	7	30.5	4.6	18.5	190	"	Fuse 15 A
STEERING GEAR	2	1	6,530	7	30.5	14.0	18.5	190	"	Fuse 30 A
E.R. LIGHT FANS	2	1	6,530	7	30.5	14.0	18.5	190	"	Fuse 30 A
STEERING GEAR (b) MAIN MOTOR	2	1	83,700	19	66.4	75	134	370	"	A.C.B. @ 225 A
WORKSHOP MOTOR	4	1	52,600	7	86.7	39.6	74	168	"	Fuse 50 A
VENTILATING FANS	2	1	6,530	7	30.5	8.6	18.5	290	"	Fuse 15 A
Lub. Oil Purifier	2	1	6,530	7	30.5	7.8	18.5	185	"	Fuse 15 A
Lub. Oil Heater	2-units	1	52,600	7	86.7	52	74	185	"	Fuse 60 A
Pump Room Vent	1	1	6,530	7	30.5	4.6	18.5	206	"	Fuse 15 A
Combustion Control	3	1	6,530	7	30.5	1.8	18.5	40	"	Fuse 15 A
Main Cargo Pump	3	2	500 M	37	116.2	707	888	200	"	A.C.B. @ 880 A
Cargo Stripping Pump	2	1	168 M	19	94	162	215	190	"	Fuse 200 A
Galley Feeder	-	1	250 M	37	82.2	192	290	190	"	A.C.B. @ 250 A
Center Castle Power	-	1	66,400	7	97.4	44	83	610	"	Fuse 60 A
Motor Space Bilge Pump	1	1	6,530	7	30.5	6.6	18.5	185	"	Fuse 15 A
Gyro Compass	1	1	33,100	7	68.8	7	54.5	650	"	Fuse 20 A
Gyro Pilot	1	1	10,400	7	38.5	8	25.5	270	"	Fuse 15 A
Gland Exhauster	1	1	6,530	7	30.5	3.5	18.5	200	"	Fuse 15 A

Lead covered & removed

240 Volts D. C.

120-V D.C.

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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.

As Below

Electrical Engineers. Date Below

COMPASSES. A.C. A.V. Comp. 60 1776 1250 116.2 37 500 M 500 M 1 1

Distance between electric generators or motors and standard compass Nearest Motor (Window Wiper) - 16 feet

Distance between electric generators or motors and steering compass Nearest Motor (Window Wiper) - 8 feet

The nearest cables to the compasses are as follows:—

A cable carrying .87 Amperes 7 feet from standard compass 4 feet from steering compass.

A cable carrying 1.7 Amperes 7 feet from standard compass 4 feet from steering compass.

A cable carrying 1.7 Amperes 7 feet from standard compass 4 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 Inf. degrees on course in the case of the standard compass, and Inf. degrees on course in the case of the steering compass.

J. A. Hodge Builder's Signature. Date May 1, 1942

Is this installation a duplicate of a previous case Yes If so, state name of vessel "Catawba"

General Remarks (State quality of workmanship, opinions as to class, &c. The electrical equipment, machinery, etc., of)

this vessel has been built under Special Survey in accordance with the regulations and requirements of this Society. The electric units with all fittings, appliances, cables and fastenings have been carefully installed on board the vessel in compliance with the rules, and the materials and workmanship throughout

are good. Upon completion of the survey the entire electrical system as a whole tested out under full working load conditions, also in accordance with section 17 of the Rules observed and found satisfactory.

The spare gear conforms to section 18 of the Rules.

In regard to the reverse current safety device the generators were paralleled, adjusted to normal voltage with moderate load and the emergency governor of one machine tripped leaving the set to its own device, the system observed with full vacuum maintained on turbine, the reverse current trip protection element functioning entirely satisfactory.

In my opinion the Electrical Equipment is eligible to be classed and recorded.

Noted L.P. 30/7/42

Total Capacity of Generators 650 Kilowatts.

The amount of Fees £245.00 When applied for, June 2, 1942

Travelling Expenses (if any) £20.00 When received, 19

Committee's Minute NEW YORK JUL 1 1942

Assigned Elec. light

Wm. B. Cowin Surveyor to Lloyd's Register of Shipping.

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

