

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

Date of writing Report 11th April 1947 When handed in at Local Office 18th April, 1947 Port of Baltimore, Maryland
 No. in Survey held at Baltimore, Maryland Date, First Survey 19 Nov., 1946 Last Survey 3rd April, 1947
 Reg. Book. (Number of Visits 12)
 -- on the S.S. "BEATRICE" (ex "Wheatland") Tons { Gross 8189
 Net 4814
 Built at Wilmington, North Carolina By whom built Newport News S.B. Co. Yard No. 142 When built 1944
 Owners Bull Steamship Company Port belonging to New York
 Electric Light Installation fitted by Newport News Shipbuilding Company Contract No. When fitted
 Is the Vessel fitted for carrying Petroleum in bulk No

System of Distribution Three - Wire Direct Current
 Pressure of supply for Lighting 115 volts, Heating - volts, Power 230 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 American Bureau of Shipping requirements
winding 40° C. are they compound wound Yes
Commentator 55° C.
 are they over compounded 5 per cent. -, 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 - By American Bureau of Shipping
 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 engine room at first grating level, 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 engine on generator flat
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 Ebony asbestos, 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 To A.I.E.E. Standards
 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
5 pole circuit breaker 1600 amp. main 900 amp. equalizer 400 amp. Neutral time limit overload, reverse current shut trip, also 5 pole imposed lever switch 1600 amp. mains. 800 amp. Equalizer Neutral
 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 Yes Instruments on main switchboard 6 ammeters 3 volt-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
 Earth lamps and switches also ground ammeter To A.I.E.E. Standards Switches, Circuit Breakers and Fusible Cut-outs, To A.I.E.E. standards
 do these comply with the requirements of the Rules are the fusible cutouts of an approved type 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 To A.I.E.E. Standards

Cables: Single, twin, ~~triple~~, or multicore. Yes are the cables insulated and protected as per Tables IV, V, X or XI of the Rules. Yes Fall of Pressure, state maximum between bus bars and

If the cables are insulated otherwise than as per Rule, are they of an approved type Yes 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 Yes 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 Main cables clipped to steel hangers.

Protected by sheet metal covers in hold spaces, clipped to bulkheads in accommodation.

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 Spacing

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 Junction 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 Yes

Earthing Connections, state what earthing connections are fitted and their respective sectional areas Neutral connection grounded through a breaker with current resistance in parallel with this breaker

Yes, 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 Main deck port side midships,

Diesel drive Automatic Control from switch board.

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 wheelhouse

has each navigation lamp an automatic indicator as per Rule Yes Secondary Batteries, are they constructed and fitted as per Rule Not fitted.

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

Cast metal guards

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 how are the cables led in paint locker aft Yes

Armoured cable clipped to deck head

where are the controlling switches situated Control switch outside the Compartment

are all fittings suitably ventilated Yes, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials Yes A.I.E.E. Standard.

Heating and Cooking Appliances, are they constructed and fitted as per Rule Standard. are air heaters constructed and fitted as per Rule Yes

Searchlight Lamps, No. of Two, whether fixed or portable Portable, are their fittings as per Rule Yes

Arc Lamps, other than searchlight lamps, No. of None, are their live parts insulated from the frame or case Yes, 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 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 Totally enclosed and drip proof

Yes, if not of this type, state distance of the combustible material horizontally or vertically above the motors Yes and Yes

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 Standard Lightning Conductors, where lightning conductors are required, are these fitted as per Rule Not fitted 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 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

Description	No. of Motors	No. per Pole	Total H.P.	Comp. No.	Strand Diam.	Max. Current In Circuit	Approx. Length (Ld. & Ret)	Insula. With	How Protected
Forged Draft Blower #1	1-20	1	.052	7	.0974	65	83	2x23	46 VC-1A Cir. BR-90 ALP
" " " #2	1-20	1	.052	7	.0974	65	83	2x40	80 " " 90
Cold Diffuser #1	1-1/125	1	.0032	7	.0232	2	13	2x42	84 " Fuse- 3
Refrig. Space #2	1-1/40	1	.0032	7	.0232	2	13	2x38	76 " " 3
Vent Fan-C3-100-1	1-1	1	.0051	7	.0305	6	18.5	2x60	120 " " 10
" " -02-113-1	1-31	1	.0051	7	.0305	15	18.5	2x45	90 " " 20
" " -02-113-2	1-31	1	.0051	7	.0305	15	18.5	2x43	86 " " 20
" " -02-115-2	1-1	1	.0051	7	.0305	15	18.5	2x44	88 " " 20
From System									
" " -03-100-2	1-11	1	.083	19	.0745	10	113	2x25	50 " " 15
" " -1-43-2	1-5	1	.013	7	.0486	25	34.5	2x20	40 " " 35
From System									
" " -2-93-1	1-5	1	.013	7	.0486	25	34.4	2x22	44 " " 35
" " -1-107-2	1-21	1	.0051	7	.0305	10	18.5	2x20	40 " " 15
" " -1-105-2	1-51	1	.0081	7	.0385	20	25.5	2x28	56 " " 30
" " -1-105-1	1-51	1	.0081	7	.0385	20	25.5	2x25	50 " " 30
" " -1-108-2	1-1	1	.0051	7	.0305	6	18.5	2x40	80 " " 10
From System									
" " -2-62	1-5	1	.013	7	.0486	25	34.5	2x65	130 " " 35
From System									
" " -03-104-2	1-11	1	.0051	7	.0305	10	18.5	2x22	44 " " 15
" " System #22	1-11	1	.0051	7	.0305	10	18.5	2x18	36 " " 15
" " Laundry	1-1	1	.0051	7	.0305	6	18.5	2x38	76 " " 10
" " System #13	1-5	1	.0081	7	.0385	25	25.5	2x45	90 " " 35
" " " #14	1-5	1	.0081	7	.0385	25	25.5	2x40	80 " " 35
" " " #17	1-7/8	1	.0051	7	.0305	4	18.5	2x32	64 " " 5
" " " #18	1-7/8	1	.0051	7	.0305	4	18.5	2x34	68 " " 5
" " " #20	1-4	1	.0051	7	.0305	15	18.5	2x45	90 " " 10

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amperes.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	-	-	-	-	-	-	-	-
AUXILIARY ...	3	300	115 - 230	1250	1200	Turbo.	-	-
EMERGENCY ...	1	60	115 - 230	250	1500	Diesel.	Diesel Oil above 150° F.	-
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. Ins.	No.	Diameter.	Circuit.	A.I.E.E.			
MAIN GENERATOR									L. C. and
EQUALISER CONNECTIONS ...	1	.64	61	.114	-	618	46'	V.C.	Basket Weave Armoured
AUXILIARY GENERATOR ...	2	1.26	(2) 61	.114	1250	1236	92'	"	"
EMERGENCY GENERATOR ...	1	.132	19	.094	250	215	50'	"	"
Neutral Motor	2	.049	(2) 7	.054	50				
ROTARY TRANSFORMER (GENERATOR) ...	1	.0114	7	.014	5	17.1	75'	"	"
ENGINE ROOM									
BOILER ROOM	1	.052	7	.097	60	83	50'	"	"
AUXILIARY SWITCHBOARDS ...									
ACCOMMODATION									L. C. and
168 circuits @ 700 watts	1	.0052	7	.031	6	18.5	100'	V.C.	Basket Weave Armoured
WIRELESS									
SEARCHLIGHT									
MASTHEAD LIGHT	1	.0052	7	.031	7.5	18.5	300'	"	"
SIDE LIGHTS	1	.0052	7	.031	4.0	18.5	120'	"	"
COMPASS LIGHTS	1	.0032	7	.024	2.5	13	50'	"	"
POOP LIGHTS	1	.0032	7	.024	1.5	13	350'	"	"
CARGO LIGHTS 30 circuits	1	.0032	7	.024	6	13	150'	"	"
ARC LAMPS									
HEATERS									

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors. H.P.	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. Ins.	No.	Diameter.	In Circuit	A.I.E.E.			
REMAINING PUMP	1-50	1	.132	19	.094	175	215	92'	V.C.	Basket Weave Armoured
MAIN BILGE LINE PUMPS ...										
GENERAL SERVICE PUMP ...										
EMERGENCY BILGE PUMP ...										
SANITARY PUMP	1-2	1	.0051	7	.0305	10	18.5	130'	"	"
CIRC. SEA WATER PUMPS ...	1-100	1	.314	37	.104	300	383	126'	"	"
CIRC. FRESH WATER PUMPS ...	1-15	1	.033	7	.0772	50	63	50'	"	"
AIR COMPRESSOR	1-15	1	.033	7	.0772	50	63	124'	"	"
FRESH WATER PUMP #1-2 ...	1-3/4	1	.0051	7	.0305	5	18.5	40'	"	"
ENGINE TURNING GEAR	1-7	1	.013	7	48.6	25	34.5	90'	"	"
Circ. Sea Water Pumps	1-10	1	.0326	7	.0772	50	63	104'	"	"
LUBRICATING OIL PUMPS ...	1-15	1	.033	7	.0772	45	63	48'	"	"
OIL FUEL TRANSFER PUMP ...	1-15	1	.033	7	.0772	45	63	82'	"	"
WINDLASS	1-60	1	.132	94	.00047	250	215	143'	"	"
WINCHES, FORWARD 9 ...	1-50	1	.104	19	.0837	150	184	50'	"	"
WINCHES, AFT... ..9 ...										
Compressor #1-2	1-10	1	.033	7	.0772	30	63	60'	"	"
STEERING GEAR—										
(a) MOTOR GENERATOR P	1-40	1	.104	19	.837	125	184	70'	"	"
(b) Maxx MOTOR ... S										
WORKSHOP MOTOR... ..	1-3	1	.0051	7	.0305	10	18.5	70'	"	"
VENTILATING FANS #1-2 ...	1-20	1	.052	7	.0974	65	83	46'	"	"
Capstan P & S	1-35	1	.104	19	.837	150	184	136'	"	"
Oil Fuel Service Pump	1-7	1	.103	7	.0486	25	34.5	32'	"	"
Cond. Pump #1-2	1-15	1	.033	7	.0772	50	63	90'	"	"
Cond. Pump #1-2	1-10	1	.033	7	.0772	35	63	98'	"	"
Aux. Air Compressor	1-5	1	.0081	7	.0385	15	25.5	88'	"	"

(x) American Institute of Electrical Engineers Current Rating for Two and Three Conductor Cables, Table No. 9

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.

Electrical Engineers.

Date

COMPASSES.

Distance between electric generators or motors and standard compass 60 feet

Distance between electric generators or motors and steering compass 50 feet

The nearest cables to the compasses are as follows:—

A cable carrying .2 Ampères .75 feet from standard compass .5 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

The maximum deviation due to electric currents was found to be Nil degrees on Steady course in the case of the standard compass, and Nil degrees on Steady course in the case of the steering compass.

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.)

The Electrical Installation to the Standard of American Bureau of Shipping has been in operation since 1944. The plans available have been examined and found to be in accordance with A.I.E.E. Marine Standard and generally in accordance with the Rules. The materials and workmanship are good and the installation has been examined under full working conditions, tested as per Rule and found satisfactory, and in my opinion, is eligible to have the Society's Classification without special notation.

Plan of Elementary Diagram of Lighting and Power System

Total Capacity of Generators 960 Kilowatts.

The amount of Fee ... £ \$100.00 When applied for, 21 April 1947
Travelling Expenses (if any) £ :10.00 When received, — 19—

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned Elec light.