

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

MAY -6 1940

Received at London Office

Date of writing Report 19 When handed in at Local Office 19 Port of NEW YORK

No. in Survey held at NEW YORK Date, First Survey 8 Dec 1939 Last Survey 3 MARCH 1940

Reg. Book. on the T.S. M.V. PETROHEAT (Number of Visits.....)

Built at ROCHESTER N.Y. By whom built DOLOMITE MARINE CORP<sup>N</sup> Yard No. 3 When built 1940

Owners DOLOMITE 3 CORPORATION. Port belonging to NEW YORK

Electric Light Installation fitted by SULLIVAN DRY DOCK CO. Contract No. ✓ When fitted 1940

Is the Vessel fitted for carrying Petroleum in bulk YES

## System of Distribution

3+2 WIRE

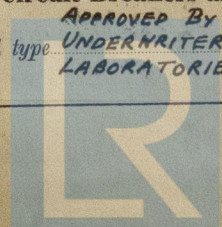
Pressure of supply for Lighting SINGLE PHASE 110 volts, Heating ✓ volts, Power 3 PHASE 220 volts.Direct or Alternating Current, Lighting SINGLE PHASE A.C. Power 3 PHASE A.C.If alternating current system, state frequency of periods per second 60Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off YESGenerators, do they comply with the requirements regarding temperature rise PLEASE SEE REPORT, are they compound wound A.C.are they over compounded 5 per cent. ✓, if not compound wound state distance between each generator 40 60 feetWhere more than one generator is fitted are they arranged to run in parallel No., is an adjustable regulating resistance fitted inseries with each shunt field YES Have certificates of test results for machines under 100 kw. been submitted andapproved YES. SEE REPORT Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing NONEAre 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 YESPosition of Generators ENG. ROOM MAIN GENERATOR PORT SIDE AUX GENERATOR STB<sup>D</sup> SIDE, is the ventilationin way of the generators satisfactory YES are they clear of all inflammable material YES if situated near unprotectedwoodwork or other combustible material, state distance of same horizontally from or vertically above the generators NONE and ✓are the generators protected from mechanical injury and damage from water, steam or oil YES, are their axes of rotation fore and aft YESEarthing, are the bedplates and frames of the generating plant efficiently earthed YES are the prime movers and their respective generatorsin metallic contact YES Main Switch Boards, where placed ENG. ROOM FOR<sup>D</sup> ENDIf 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 mechanicalinjury and damage from water, steam or oil YES, if situated near unprotected woodwork or other combustible material, state distance of samehorizontally from or vertically above the switchboards NONE and ✓, are they constructed wholly of durable, non-ignitable non-absorbentmaterials YES, is all insulation of high dielectric strength and of permanently high insulation resistance YESis 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 othernon-hygroscopic insulating material, and the slab similarly insulated from its framework ✓, is the non-hygroscopic insulating material of an approvedtype ✓, and is the frame effectively earthed ✓ Are the fittings as per Rule regarding:— spacing or shielding of live partsYES, accessibility of all parts YES, absence of fuses on back of board YES, temperature rise ofomnibus 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 ofswitches No. Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches

3 POLE SWITCH + CIRCUIT BREAKER FOR EACH GENERATOR, 3 on 2 pole KNIFE SWITCHES &amp; FUSES FOR EACH OUTGOING CIRCUIT

Are turbine driven generators fitted with emergency trip switch as per rule ✓ Are cupboards or compartments containing switchboards composed offire-resisting material or lined with approved material NONE Instruments on main switchboard 1 AC, 2 DC ammeters 2 AC, 2 DCvoltmeters 1 POWER FACTOR INDICATOR Synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection

SYNCHRONIZER NOT REQUIRED Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system

3 GROUND LAMPS

do these comply with the requirements of the Rules YES are the fusible cutouts of an approved type APPROVED BY UNDERWRITERS LABORATORIES have the reversed



current protection devices been tested under working conditions NONE 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, TWIN 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 5 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 ✓, 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 + ARMORED

**Support and Protection of Cables,** state how the cables are supported and protected CLIPPED TO BULKHEADS, LEADED + ARMORED **THROUGHOUT, MECHANICAL PROTECTION WHERE NECESSARY**

If cables are run in wood casings, are the casings and caps secured by screws NO WOOD CASINGS, are the cap screws of brass ✓, are the cables run in separate grooves ✓. If armored 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 SOLDERED, WELL TAPED + MADE IN METAL JUNCTION BOXES THROUGHOUT

**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 ARMORED THROUGHOUT state the material of which the bushes are made ✓

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas. GROUND LAMPS ONLY

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 NO are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected NO how are the cables led where are the controlling switches situated ✓ are all fittings suitably ventilated ✓, are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials ✓

**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** 1, whether fixed or portable FIXED, 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 ✓, 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 MAJORITY FORE + AFT, 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 NO UNPROTECTED WOODWORK 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 NOT REQ<sup>d</sup> **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 APPROVED BY UNDERWRITERS LABORATORIES If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office APPROVED BY UNDERWRITERS LABORATORIES **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.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN ... ..	1	75 KVA	220	180	3600	STEAM TURBINE		
AUXILIARY ...	1	50 KVA	220	120	900	DIESEL ENGINE	DIESEL OIL	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. Ins.	No.	Diameter.	Circuit.	Rate.				
MAIN GENERATOR ... ..	1	1318	19	0.094	160	215	✓ 30	VARNISHED CAMBRIC	LEADED + ARMORED	
EQUALISER CONNECTIONS	NONE							THROUGHOUT	THROUGHOUT	
AUXILIARY GENERATOR...	1	0829	19	0.074	120	158	✓ 60			
EMERGENCY GENERATOR	NONE									
TRANSFORMER } MOTOR	1	013	7	0.0486	23	35	✓ 15			
ENGINE ROOM } GENERATOR...	1	0082	"	0.0385	15	25	✓ 15			
BOILER ROOM } 3 CIRCUITS	1	0032	"	0.0242	7	13	✓ 100			
AUXILIARY SWITCHBOARDS										
LOWER 14 CIRCUITS	1	0328	7	0.0772	45	63	✓ 60			
UPPER 8 "	1	013	"	0.0486	27	35	✓ 100			
NAVIGATION 5 "	1	0032	"	0.0242	5	13	✓ 120			
ACCOMMODATION ... ..										
ALL CIRCUITS	1	0032	7	0.0242	7	13	✓			
WIRELESS ... ..	1	0051	7	0.0305	13	18	✓			
SEARCHLIGHT ... ..	1	0032	7	0.0242	7	13	✓			
MASTHEAD LIGHT ... ..	1	"	"	"	1	"	✓			
SIDE LIGHTS ... ..	1	"	"	"	1	"	✓			
COMPASS LIGHTS ... ..	1	"	"	"	1	"	✓			
POOP LIGHTS ... ..	1	"	"	"	5	"	✓			
CARGO LIGHTS ... ..	1	"	"	"	5	"	✓			
ARC LAMPS ... ..	NONE									
HEATERS ... ..	NONE									

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. Ins.	No.	Diameter.	In Circuit.	Rule.			
CONDENSATE PUMP	1	1	0032	7	0242	2	13	✓ 60	VARNISHED	LEADED & ARMORED
MAIN BILGE LINE PUMPS	1	1	"	"	"	4	"	✓ 70	CAMBRIC	THROUGHOUT
GENERAL SERVICE PUMP									THROUGHOUT	
EMERGENCY BILGE PUMP	1	1	0206	7	0612	38	46	✓ 40		
SANITARY PUMP	1	1	0032	7	0242	3	13	✓ 75		
CIRC. SEA WATER PUMPS	1	1	0082	"	0385	19	25	✓ 50		
CIRC. FRESH WATER PUMPS	1	1	"	"	"	"	25	✓ 50		
AIR COMPRESSOR 7 1/2 HP	1	1	"	"	"	"	25	✓ 60		
FRESH WATER PUMP	1	1	0032	"	0242	2	13	✓		
ENGINE TURNING GEAR	HAND									
ENGINE REVERSING GEAR	AIR									
LUBRICATING OIL PUMPS	1	1	0082	7	0385	14	25	✓ 20		
OIL FUEL PUMP	2	1	0032	"	0242	3	13	✓ 40		
WINDLASS	1	1	0521	"	0974	76	83	✓ 500		
WINCHES, FORWARD	STEAM									
AIR COMPRESSOR 3 HP	1	1	0032	7	0242	9	18	✓ 75		
VACUUM, AFT CARSTAN	1	1	013	"	0486	29	34	✓ 100		
STEERING GEAR—										
(a) MOTOR GENERATOR										
(b) MAIN MOTOR	2	1	013	7	0486	14	34	✓ 100		
WORKSHOP MOTOR										
VENTILATING FANS	1	1	0032	7	0242	8	13	✓ 100		
CENTRIFUGE	1	1	"	"	"	2	"	✓ 30		
DOMESTIC F.W. PUMP	1	1	"	"	"	"	"	✓ 60		
LUB. OIL LOADING PUMP	1	1	"	"	"	"	"	✓ 30		
SEPTIC TANK PUMP	1	1	0051	"	0305		18	✓ 100		
FOR BILGE PUMP	1	1	0032	"	0242	6	13	✓ 400		
FOR WASH WATER PUMP	1	1	013	"	0486	12	34	✓		



M. V. "PETROHEAT"

Electrical Installation (Con't)

As the generators had been in the ship for 18 months, it was considered they should be saved if possible. As the capacity of the Main Generator was ample, it was considered that it could be brought in order by reducing the output to 160 amp.

A metal notice that the load should not exceed 160 amps has been fastened on the switchboard and the circuit breaker set at 338 amps, the nearest calibration on the circuit breaker.

This could not be done with the Auxiliary Generator, as swings caused by cutting in large motors took practically full output. The vessel was urgently required and a compensation was put on board to be fitted at sea to the 15 HP motor and the electrician has since stated that it has been quite satisfactory. He further stated that increase-time-limit coils have been ordered for the circuit breakers and will be fitted on the vessel's next voyage.

It is submitted however that in the circumstances of this case, these Generators might be accepted by the Committee for the following reasons:

1. The Main Generator can be used at any time (it must be used when hoisting anchor), and is of ample capacity.
2. The Aux. Generator load at sea will be comparatively light.
3. The vessel is Diesel propelled and the engine room is well ventilated and therefore cool.
4. The vessel is classed for "Coastwise & W. Indies" only and is therefore employed on short voyages only.

Both Main and Auxiliary Generators were tried at substantial loads and found to run quite cool, and in my opinion, they are now in good and safe working condition for this particular vessel.

General

The Electrical Installation of this vessel is now, in my opinion, in good and safe working condition and eligible, in my opinion, to receive the notation LMC 3-40 in the Register Book.

*J. S. Peck*  
*per Mr. Bennett*

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.

*Sullivan Dry Dock & Repair Corp.*  
*by Anthony J. McAllister*

Electrical Engineers.

Date *4.4.40*COMPASSES.

Distance between electric generators or motors and standard compass *about 60 feet*

Distance between electric generators or motors and steering compass *" 50*

The nearest cables to the compasses are as follows:—

A cable carrying *1/4* Ampères *close to* ~~feet from~~ standard compass *close to* ~~feet from~~ steering compass. *Binnacle Lights*  
A cable carrying *1* Ampères *alt 8* feet from standard compass *about 2* feet from steering compass. *STEERING GEAR CONTROL*  
A cable carrying *5* Ampères *" 10* feet from standard compass *" 6* feet from steering compass. *NAVIGATION LIGHTS*

Have the compasses been adjusted with and without the electric installation at work at full power.

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 \_\_\_\_\_ degrees on \_\_\_\_\_ course in the case of the standard compass, and \_\_\_\_\_ degrees on \_\_\_\_\_ course in the case of the steering compass.

*Sullivan Dry Dock & Repair Corp.*  
*by Anthony J. McAllister*

Builder's Signature.

Date *4.4.40*

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, etc.)

*This vessel was originally intended to class with another Society & the Electrical Installation was all added & the switchboard, generators & motor completed in the shipyard when it was arranged to submit the vessel for class with the Society*

*It has been fitted or laid & wired under survey, & the workmanship & material are good but it departs from the Rules in the following*

(1) A.C. Voltage for Power 220

*This vessel is a Tanker, but the installation has been well carried out, all wiring being kept out of dangerous spaces, & it is submitted that this might be approved by the Committee as in previous cases (see Dolomite 4, Pan-Virginia etc)*

(2)

*The original builder did not complete the vessel, she was completed by the Owners, & it then became possible to get certificates for the Generators. Upon inspection, it was found that the rating of the Generators was at 50°C temperature rise instead of 40°C as required by Rule*

P.T.O.

Total Capacity of Generators *125* Kilowatts.

The amount of Fee ... *\$170<sup>00</sup>* : *When applied for, APR 8 - 1940*

Travelling Expenses (if any) £ : *When received, APR 16 1940*

Committee's Minute

Assigned *Elec. light*

*J. S. Peck*  
Surveyor to Lloyd's Register of Shipping

*per Mr. Bennett*

*NEW YORK APR 17 1940*