

# REPORT ON ELECTRIC PROPELLING MACHINERY.

No. 3729

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No. in Survey held at Seattle, Washington Date, First Survey Oct. 13th 1947 Last Survey February 20th 1948

Reg. Book. 22619 Single on Twin Triple Quadruple } Screw vessel "MINERVE" (ex "Donner Lake") Number of Visits 26

Built at Portland, Oregon By whom built Kaiser Company, Inc. Yard No. P66 When built 1944

Electrical Machines made at Lynn, Mass. and Schenectady, N.Y. By whom made General Electric Co. Contract No. - Generator No. 5840714 When made x Motor No. 6501918

Shaft Horse Power at Full Power 6000 Total capacity of Generators 4925 5400 kilowatts

Nom. Horse Power as per Rule 1324 Owners Government of France Port belonging to Le Havre (Contemplated)

Trade for which Vessel is intended International, Petroleum in Bulk

TEAM ENGINES.—Type of Engines 1 Curtis Impulse 10 Stage Turbine No. of Engines One Revs. per minute 3600 3715

Is a Governor fitted Yes Is the speed variation as per Rule when load is thrown off

Is an emergency Governor fitted Yes Is it arranged for hand tripping Yes

Does it trip the throttle valve as per Rule Yes If exhaust steam is admitted, is an automatic shut-off fitted - Is provision made for bleeding steam - and is a non-return or positive shut-off valve fitted -

Lubricating Oil.—State what means are provided for emergency supply 1 Vertical rotary 60 G.P.M. electrically driven

Is the emergency reserve sufficient to maintain lubrication as per Rule Yes

Mechanical Balance.—Are the Engines and Generators balanced so as not to cause appreciable vibration Yes

IL ENGINES.—Type of Engines - Revs. per minute -

Is a Governor fitted - Is the speed variation as per Rule when load is thrown off -

Is an Emergency Governor fitted - Does it operate as per Rule -

Rating.—Has the Engine been tested and found to be capable of developing 10 per cent. overload for one hour as per Rule -

GENERATORS.—Direct or Alternating Current Alternating Current No. of Generators One

If alternating current state number of phases Three frequency 60 Cycles / second

Kilowatts per Generator 4925 5400 Voltage per Generator 2300 2370 Amperes per Generator 1237 1315

Do they comply with the requirements regarding insulation materials A I E E Standards

Terminals A I E E Standards, coolers Yes, thermometers Inlet Air

Lubrication Yes, position in ship on first grating fore and aft direction Armature 60°C (imbedded temperature rise detector) Field 85°C Resistance

Imbedded temperature detectors Yes shaft currents Yes

Ventilation.—State how this is arranged (open or closed system) Closed system circulated by fans mounted on each end of rotor with surface air cooler.

If open system are ventilating arrangements satisfactory -

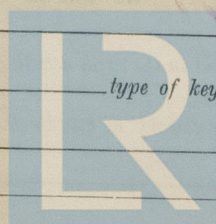
Heating when Idle.—State what provision is made One heater at each end of generator.

Facilities for Inspection and Repair.—Are these as per Rule Yes

Are wear-down gauges supplied No

Bilges.—Are the arrangements to prevent accumulation of bilge-water under the machines satisfactory Yes

Shafts dia. of journals Turbine 5" Ford. 10" Aft, Generator 5 1/2" No. of keys None type of key -



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*MOTORS.—S.H.P. per Motor at full power* 6000 *No. of Motors* One

*Single or double unit* Single *Voltage per Motor* 2300 AC *Amperes per Motor* 1160

*Do they comply with the requirements regarding insulation materials* A I E E Standards

*terminals* A I E E Standards, *coolers* Yes, *thermometers* Yes

*lubrication* Yes, *temperature rise* Yes, *embedded temperature detectors* Yes

*shaft currents* X

**A.C. Motors.**—Are the laminations securely clamped around the whole of the periphery..... **Yes**  
and are they insulated from one another with approved material..... **A I E E Standards**  
Is provision made for machining the collector rings..... **Yes**  
Do the Motors remain in step under all normal conditions of running..... **-**

**D.C. Motors.**—Are the brushes staggered as per Rule —

If the system permits overspeeding at light loads are overspeed protection devices fitted —

**EXCITATION.**—Is current for excitation taken from the ship's Auxiliary Generators. Yes, two 75 KWS shunt wound generators

If so state voltage 110 and excitation amperes at full power 557 Amps. kilowatts for excitation 150 KWS

State arrangements for excitation of Propulsion Generators Normally controlled by a voltage regulator, also by a manually operated rheostat in event of the regulator becoming inoperative. No overload or short circuit protection provided.

and Propelling Motors From same source as Generators

If an alternative means of excitation is provided, state particulars Two 75 KWS exciter generators with transfer switch, only one exciter used at one time.

(insulated windings 50°C)

Do the Excitation Machines comply with the requirements regarding temperature rise at full power A.I.E.E. Standards (commutator 55° C.

and after manœuvring as per Rule -

**D.C. Systems.**—Are the arrangements for Motor and Generator excitation as per Rule -

**CONTROL.**—Position of Main Control Panel In engine room first grating level

Do the Control Panels comply with the requirements regarding position Yes

distance from combustible material Yes, grouping of controls Yes

and instruments Yes, insulating materials (state what type is used) Ebony asbestos and A.I.E.E. approved materials

spacing and shielding of live parts A.I.E.E. Standards accessibility of parts Yes

position of fuses Yes, proportioning of busbars A.I.E.E. Standards

locking of screws and nuts Yes, labelling Yes, fuses for voltmeters, etc. Yes

switches and circuit breakers A.I.E.E. Standards, fusible cutouts A.I.E.E. Standards

proportioning of levers, connecting links, etc. Yes, interlocking Yes

provision for manual operation of contactors, etc. (state method employed) No provision for manual operation on magnetically operated contactors

earthing of instrument cases above 250 volts to earth Yes

provision of renewable arcing tips on switches subject to arcing Yes

capability of withstanding shock and inclination Yes

operation with high and low voltage Yes provision for maintaining

alignment of operating shafts Yes rust proofing of parts Yes

**Overload and Short Circuit Protection.**—State what means are provided **None**

At what current or load is it set to operate ..... Has it been tested by tripping  
by hand when running at full power and found satisfactory .....  
..... Control action when removes excitation when

by hand when running at full power and found satisfactory

**Earth Detection.**—Is the main circuit provided with means for detecting earths

Are aural and visual alarms fitted

If a limiting resistance is connected in the earth detecting circuit what is the ohmic value

What earth leakage current is necessary to operate the device

Ground detecting relay removes excitation when fault occurs.

No aural devise

Is main power interrupted by the occurrence of an earth fault

Removes excitation

Yes, 67 Ohms.

5 Amperes

If a switch is used to disconnect the aural signal does it automatically switch on the visual alarm \_\_\_\_\_

Are the excitation circuits provided with means for earth detection No

**Mechanical Protection.**—Are circuits above 250 volts to earth protected as per Rule Yes

**Bridge or Deck Control.**—Is bridge control provided No If so, from how many stations -

**Bridge or Deck Control.**—Is bridge control provided..... No ..... If so, from how many stations..... - .....

Can they be operated freely without producing currents or loads in excess of the working capacity of the plant..... - .....

and without reference to electrical instruments. - Is an emergency control provided in the engine room Main control  
and can the transfer to this control be made quickly in the engine room. -

Can the emergency control be rendered mechanically independent of the bridge control. —

Instruments and Gauges.—State what Instruments are provided for each Generator Field temp, stator temp, excitation voltmeter, AC voltmeter, field ammeter, A.C. ammeter, Turbine RPM indicator, phase balance relay, ground protection relay and for each Motor Stator temp, excitation voltmeter, H.P. meter, field ammeter, A.C. ammeter, A.C. ammeter, Shaft RPM Ind. and, for Steam Engines, what Gauges are provided Main Steam Gauge, Main Turbine Steam Chest, main steam temp. to turbine lube. service disch, Main feed discharge. Is an Insulation Tester provided Yes

**Discharge Protection.**—Are all circuits protected as per Rule..... **Yes**

**D.C. Systems.**—If the Generators are connected in series state what means are provided to prevent reversal of rotation —

Are the Propulsion Generators also used alternatively for other purposes Yes, cargo and stripping pumps

If so, is provision made for overload protection, voltage adjustment, etc., as per Rule Yes

**Reversing Switches.**—Are any provided **Yes** If so, are they interlocked as per Rule **Yes**

**Resistances.**—Are shunt resistances for synchronous motor fields insulated as per Rule A.I.E.E. Standards

**Temperature Alarm.**—Are machines with enclosed ventilating system, etc., fitted with temperature alarm..... **No**

**Auxiliary Power.**—Are essential services protected from interruption due to overloading of non-essential circuits. **No preference Tripping**

**INDUCTORS & CABLES.**—Are all essential Conductors stranded as per Rule **Yes**  
 Are the ends of Paper and Varnished Cambric Insulated Cables sealed **Yes**  
 Are the ends of all Cables having a sectional area of 0.04 sq. in. and above provided with Cable sockets **Yes**  
 Are all Cables carrying alternating current as per Rule **A.I.E.E. Standards** Have all Cables been tested at the makers' works as per Rule **A.I.E.E. Standards**

**SECONDARY BATTERIES.**—Are Batteries used for starting Main Propulsion Engines —  
 so, have full particulars been submitted and approved — Have they been tested under  
 working conditions and do they give the number of starts required by the Rules —  
 Are they installed as per Rule — Are the charging arrangements satisfactory —

ARE GEAR.—If engaged on open sea service has a list of spare gear been submitted and approved Vessels list checked and found adequate  
 a list of the articles supplied attached to this report No  
 are they stored as per Rule Yes

ELECTRIC PROPULSION EQUIPMENT CONDUCTORS.								
DESCRIPTION—MAIN GENERATORS.	CONDUCTORS.		TOTAL MAXIMUM CURRENT—AMPERES.		MAXIMUM VOLTAGE TO EARTH.	INSULATED WITH.	DI-ELECTRIC THICKNESS.	HOW PROTECTED.
	No. per Pole.	Nominal Area per Pole.	In Circuit.	Rate.				
MAIN GENERATORS	2	2.3562	1315 ✓	2272	2300	V.C.	10/64"	Bronze Tape
GENERATOR FIELDS	1	.3922	167 ✓	529	110	V.C.	9/64"	" "
MAIN MOTORS	2	2.3562	1160 ✓	2272	2300	V.C.	10/64"	" "
MOTOR FIELDS	1	.3922	390 ✓	529	110	V.C.	9/64"	" "
CONTROL CIRCUITS From prop. Panel	1	.0051	-	30	-	V.C.	4/64"	L.A. & Basket Weave Armoured
OTHER CIRCUITS:— See Rpt. No. 13								



All Conductors are of annealed copper, conforming to International Electrotechnical Commission Publication No. 28.

The Insulated Conductors have withstood the dielectric tests specified in the Rules.

The foregoing is a correct description,

Electrical Engineers.

Date

COMPASSES.—Are Single-Conductor circuits carrying continuous current arranged with lead and return Conductors fitted as close to one another as possible

Yes

Have tests been made during adjustment of the Compasses to determine the effect of switching the main circuits on and off Yes

The maximum deviation due to electric currents was found to be Nil degrees on All course<sup>s</sup> in the case of the

Standard Compass and Nil degrees on All course<sup>s</sup> in the case of the Steering Compass.

Builders' Signature.

Date

Dates of Survey while building { During progress of work in shops -  
During erection on board vessel - 13th October, 1947, to 20th February, 1948  
Total No. of visits 26

Is this machinery duplicate of a previous case X If so, state name of vessel X

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

The electrical equipment has been installed to the Requirements of the American Bureau of Shipping.

The plans available have been examined and found to be in accordance with A.I.E.E. Standards and generally in accordance with the Rules except as Noted on Report No. 13.

The dimensions in this report have been taken from the plans, and have been checked as far as practicable on the vessel and found correct.

The materials and workmanship are good, and the installation has been examined under working conditions and found satisfactory.

In my opinion, the electrical installation is such as could be accepted by the Committee for Classification.

The amount of Entry Fee ... £ : : When applied for, 19

Travelling Expenses (if any) £ : : SEE RPT. 13 When received, 19

James F. Robertson  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

NEW YORK APR 7 1948

Assigned See attached First Entry Report



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