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FOR IMMEDIATE RELEASE

A group of students at the Massachusetts Institute of Technology have accepted a California Institute of Technology student's challenge to a transcontinental electric car race.

Wally E. Rippel, 23, of (5781 Valley Oak Dr.) Hollywood, Calif., who graduated from Caltech in June, proposed the race to stimulate public interest in electric vehicles and to promote their development, with emphasis on the non-pollutant value of electrically powered transportation.

The race is tentatively scheduled to start at 12:00 (EDT ) on August 19.

The M.I.T. car will race westbound over a route from Cambridge, Mass., to Pasadena, Calif. The Caltech vehicle will travel the same route in the opposite direction.

Rippel's car is a converted Volkswagen Microbus, powered by a 20 horsepower electric traction motor of the same type used in fork lift trucks. With a battery pack of 20 lead-cobalt batteries, his vehicle has a range of about 60 miles at 45 miles per hour before requiring recharging. The time required for recharging the Caltech car is 35 minutes using a 220-volt, three-phase source.

After the race, Rippel will remain in the east where he will be a graduate student in physics at Cornell University, Ithaca, N. Y.

The M.I.T. students, believing that designing a car exclusively for the race would make little contribution to electric car technology, are building a vehicle which they have designed as a test bed for electric car components.

The 1968 Chevrolet Corvair, which the M.I.T. students chose as the basis for their vehicle, has been modified to accept an electric motor in place of the conventional gasoline engine. The batteries and electronic controls are housed in the engine compartment, the luggage compartment, and the back seat area.

Under present plans, the M.I.T. car will use 2,000 pounds of Gulton high-speed recharge nickel-cadmium batteries. The M.I.T. vehicle is expected to have a range of 80

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to 100 miles at 60 miles an hour. At 45 miles an hour, the range is expected to be as much as 150 miles. Battery recharging will use a 440-volt, three-phase supply and will take about 15 minutes.

According to the M.I.T. students, the motor, controls, and instrumentation contained in their car will include more electronic devices than any other automobile ever built.

For example, the M.I.T. students are adapting to their car a new experimental transistorized direct current motor originally developed to test out some new ideas that might one day be applicable to linear or rotary motors for high speed vehicles. The development was supported by the High Speed Ground Transportation Project of the U.S. Department of Transportation.

The motor has a permanent magnetic field on the rotor. The currents in the stator windings are commutated by high-power silicon controlled rectifiers. Electronic commutation, which eliminates brushes found in conventional dc motors, enables the M.I.T. motor to operate with considerably higher electronic frequencies with a consequent savings in weight. The experimental motor weighs 80 pounds and should develop 30 horsepower with an efficiency of 85 per cent.

Because the motor is highly experimental, however, the M.I.T. students will be taking no chances. They plan to carry a conventional dc traction motor along in a following vehicle during the race and will make a roadside replacement in the event of a malfunction.

The control circuitry, designed for use with virtually any motor or any battery system, uses pulse-width-modulation to provide a smooth variation of voltage to the motor. The circuitry incorporates elaborate current sensing and malfunction detection and correction instrumentation for the protection of the batteries and motor, as well as high voltage switching transistors which perform the actual switching of the battery power.

Instrumentation is included which will provide information for the evaluation of the components under operating conditions.

All told, the motor, controls, and instrumentation incorporate several hundred semiconductor devices, including transistors, silicon controlled rectifiers, diodes, and both digital and linear integrated circuits.

In the race, two persons, who have yet to be selected, will ride in the M.I.T car and alternate in the driving. One or more support vehicles will trail the M.I.T. car carrying spare parts and supplies. The M.I.T. students expect to make the cross country

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trip in three and a half days of continuous driving, stopping only for recharging and, if necessary, roadside repairs.

"We do not claim that the vehicle we now have is economically feasible, " says Leon S. Loeb, 20, of (155 Kush Lane) Corpus Christi, Tex., a mechanical engineering junior who is coordinating the M.I.T. student effort. "However, it seems clear that future mass production will provide components with similar performance at reasonable cost."

"It has been shown that conventional motors and batteries aren't good enough. After the race, we intend to equip the car with fuel cells, motors included in the wheels, and various other devices."

Design and planning of the car havebeen undertaken by several M.I.T. students. Among those participating in design, planning and construction, in addition to Loeb, are:

W. Sumner Brown, 24, of (2337 Rochester Rd.) Pittsburgh, Pa., an electrical engineering graduate student.

William W. Carson, 20, of (1842 North 83rd St.) Wauwatosa, Wis., a mechanical engineering senior.

Charles W. Kaminski, Jr., 19, of (3 Old Salem Rd.) Norwich, Conn., an electrical engineering junior.

Fred R. Kern, Jr., 25, of (15 Water St.) New Rochelle, N.Y., a mechanical engineering graduate student.

James S. Martin, 20, of (369 S. Union St.) Burlington, Vt., an electrical engineering junior.

David A. Saar, 20, of (169 West St.) White Plains, N.Y., an electrical engineering junior.

Richard C. Van Brunt, 20, of (327 Birch Rd.) Fairfield, Conn., an electrical engineering senior.

Frederic W. Watriss, Jr., 21, of (Hurricane House) Concord, Mass., a senior in management.

William B. Zimmermann, 20, of (714 Hollywood Lane) Mansfield, Ohio, a mechanical engineering graduate student.

As a student project, the development of the M.I.T. car has been supported principally by contributions from industry. The M.I.T. students have received donations and components from Gulton Industries, Inc., the General Motors Corporation, the Westinghouse Electric Corporation, and the Northeast Electronics Research and Engineering Meeting (NEREM).

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Electric Fuel Propulsion, Inc., manufacturer of the Mars II electric car, is arranging recharging facilities for both the M.I.T. and Caltech groups. The company also supplied the M.I.T. group with the backup conventional dc traction motor.

Advising the M.I.T. students is Professor Richard D. Thornton of the M.I.T. Department of Electrical Engineering.

NEREM is the annual technical meeting sponsored by the northeastern sections of the Institute of Electrical and Electronics Engineers and is held in Boston each fall. Regardless of the outcome of the race, Rippel and several of the M.I.T. students will present papers dealing with electric vehicle technology at this year's meeting in November.

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July 24, 1968