TECHNICAL PROGRESS REPORT
FOR
PEPCO: TURBO-Z BATTERY CHARGING SYSTEM

Calendar Quarter Ending: 3-31-1999
Instrument Number: DE-FG01-96EE15658

To: DoE Recipients
From: Jeff Rose

The project is proceeding at a rapid pace now. The software is in development for the control board and the test stand. Portions of the writing and debugging of this software have been in conjunction with the hardware development. The software now interfaces with all the measurement instruments and displays the measurements on the screen, and it saves the measurements to a disc file. There is still cleanup work to do on the display items. Work must still be imparted to the code to control a charging sequence while taking measurements of the results.

The test stand hardware has received a good development effort this quarter. The timer-counter board is working in the computer. This board paces the measurement cycle and times the discharge pulse (whine circuit). The thermocouple multiplexer is scanning at the same time the analog to digital converter is taking measurements. We have made a good number of hardware modifications to solve problems revealed while writing the software.

The power factor correction for the charger power section is still in development. The engineers have found additional sources for the PFC chips, and they have obtained more technical data sheets and acquired samples. The control board schematics are complete, and the software is far along in the development phase. The functions of the control board have been detailed. The control board must next be integrated with the power supply unit. The next phase of development will concentrate on integrating the components together. At this time, the final debugging of the hardware and software will begin.

Additionally, the capacitive coupler development is proceeding. The annual DARPA/DoT Advanced Transportation review will be held on May 16, 1999. We expect to learn the status of our project proposal during this conference. Should we more forward, UL has agreed to help us determine the design requirements of the complete charging system at their EV testing facility, prior to manufacturing. This system is dependent on the final product of this project.

We will try to complete the circuit board design enough to make prototype boards in this project. It is not clear at this level if we will have all the variables in place to perform an adequate test of the system. The system components need to be further defined before a pre-production board can be manufactured. The level at project completion will, at least, be such that a minimum of design characteristics can be implemented into the board to create a production circuit board for a specific design.
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