Memorandum

Michael Mellitt EE - 41440 Spring 2013

**To**: Dr. Schafer

**From**: Light Bike

**Date**: Tuesday, February 26, 2013

**Subject**: Progress Update 6

1. For the sixth design review, our team has continued to work on completing the single battery charger. The 30A current sensor has been attached to a break-out board; however, we have been unable to find surface mount capacitors to complete the board. Additionally we need another break-out board for the DAC. We have experimented sourcing current to the 12V motor. Finally the battery conditioner has arrived and we will begin recovering the batteries.

a) The current sensor has been attached to a breakout board but cannot be tested until the surface mount capacitors are in place. The software necessary for operation is finished and just needs to be tested

b) Mike and Alex have continued to work on I2C and plan to have both the LCD screen and DAC operational shortly. Another breakout board is necessary for the DAC.

c) Alex and Pat have experimented with the 12V motor and a power mosfet. They found that they can only source 1.4 A through it as the motor seems to have some sort of cut off.

d) The Optima battery charger has arrived and will be used to recondition the batteries. The reconditioning process takes approximately 2 days.

2. For next week we plan to have all of the subsystems completed and integrated together. This system will include a current source and current sensor that work together to maintain a constant current through the battery. The current source will consist of a power mosfet controlled by a microcontroller using a DAC connected to an op-amp. This will require I2C to communicate with the DAC. The current sensor will act as feedback for the control and is read from an analog pin on the controller. There will be a buffering op-amp between the current sensor and the controller. Finally the entire system will be sourced by the 30V 10A DC power supply.