Work Completed:

Before leaving for spring break, we received our linear slides with attached motors. Our small parts had been ordered but we did not receive them at this time. On the motors was an attached encoder. This requires a 5V power supply. I contacted an individual from the encoder company, and found that the encoder requires a 5V power source. I then contacted Rick Salpeter from Analytic Systems to get another quote on a power supply. This 5V supply is an additional $75.00.

After receiving all of this quote information, I then became aware that no shipping charges were included. I emailed Rick Salpeter, and he informed me that I could research this by using the UPS ground website and the weight information off the data sheets. I requested a definite quote of the shipping amount before putting in the purchase order, however it is not imperative that this is completed soon since we are using the variable testing power supply at this time.

The encoders also pose some difficulty because they each have two analog inputs to the computer. The multifunction input/output hardware purchase through National Instruments that we purchased only has 16 inputs. The sensors use 12 of these inputs, and with 2 inputs from each encoder, that would leave us needing 2 additional inputs. This was resolved by deciding to putting each of the inputs from the encoder through the same channel.

I also contacted a representative from Yarde Materials to get a quote on stainless steel for the base. The exact dimensions of this piece are unclear and still need to be developed.

I spent some time during spring break in creating some drawings on Unigraphics. In the sketches of the base, I sketched the outline of the slides to get a better idea of where everything will be located. Once the stainless steel is obtained, machining must be done, so all of the sketches should be completed before then. A sketch of the base itself is shown in Figure 1 on the next page.
The screw holes for the vertical slide was suggested to be $\frac{1}{2}''$ but also counter sunk. This can be seen in Figure 2 below.
This week we also developed some strategy as to how the vertical slide would be attached. It was established that a brace would be placed behind another piece of aluminum to provide stability and counteract any possible torques. The design of the brace can be seen in Figure 3 below.

![Figure 3: Vertical Brace Assembly](image)

**Future Work:**

This coming week, the base material must be selected and an order should be in the works. The purchase orders must be made for the power supplies. The USB-6210 should be configured to the rest of the apparatus.

Design should continue involving the mechanical setup of the sensor attachment to the slides, as well as the bracket attachment to the linear slides. These will done this week, and the base drawings should be completed.

**Project Review:**

This week, design of the base and the mechanical setup made some advances. Also, the setup of the slides and the encoders was accomplished. Information on the base and power supply was received from vendors, and quotes are being processed.

**Hours Worked:** 15