Traumatic Brain Injury Reducing Army Combat Helmet

Team 6
Week 7
March 17, 2009
Damian Frankiewicz
Work Completed:

A cutting tool was ordered for the Expanded Polystyrene. The following provider was used:

Hot Wire Foam Factory
216 East Laurel Ave
Lompoc, Ca 93436

Initially, the Pro Model Starter Kit was going to be ordered but it was deemed too expensive because it only came with one tool and a power supply for about $100. In the end, only a tool was purchased for now and a power supply will be found later. There is no hurry because the blocks of Expanded Polystyrene have not arrived yet. It has been almost two weeks and there has been no word of anything from the supplier as of Monday this week. Inquiries will have to made later this week as to the status of the order. The cutting tool used to cut the EPS when it arrived is called a Freehand Router, which is a large wire that can be bent into any shape. 5 wires come with the tool and the order was $47.63 with shipping.

All of the Kevlar layers for the third outer shell were cut using the pinwheel technique. It will be hardened probably this Wednesday, which concludes all of the shells that will be used for testing. Since the EPS is not yet here, work on other parts of the project has taken priority, such as molding the clay for the neck and chin guards. The neck guard is just a simple curved slab on the back of the neck. Since the clay mold is basically finished work can start on making a Kevlar piece out of it.

Lastly, a comparison of the three outer shells was made. Since the final shell is not yet hardened, no picture of it was taken yet. However, it is clear that it will be slightly weaker than the second one because less care was taken mainly because the second helmet is fairly good and will be used as the optimal helmet for presentation just because it looks excellent and almost professional. Based on this, the order of the helmet quality is as follows:

\[ 2 > 3 > 1 \]

The first helmet is undoubtedly the weakest because it is made up of triangles. It will therefore be used on any tests that may break the helmet due to its lower quality. The second helmet should be used as the display helmet due to its professional quality.
Figure 1 shows a comparison of helmets one and two. The difference in quality is instantly noticeable.

![Figure 1: Comparison of Helmets 1 (Left) and 2 (Right)](image)

**Future Work:**

Inquiries to the status of the EPS must be made. The third shell must also be hardened. Once the EPS is found it must be cut down to the appropriate size of the helmets. A Kevlar piece must also be made based on the clay mold of the neck guard.

**Hours Worked:**

A total of 12.5 hours have been worked on the seventh week.