Traumatic Brain Injury Reducing Army Combat Helmet

Team 6
Week 11
April 14, 2009
Damian Frankiewicz
Work Completed:

Most of the time spent this week was working on fitting the Expanded Polystyrene to the three existing helmets. The helmets will be tested on Tuesday, April 14, so all pretesting preparation had to be finished beforehand. Figure 1 shows the ending of the cutting process.

![Figure 1: Cut Expanded Polystyrene](image)

Figure 1 shows the foam cut fairly thick, with spots of up to an inch in thickness, especially around the curved parts between the sides and the top. Figure 2 shows a rough estimate of the foam thickness.
My partners want to keep this expanded thickness, but this poses some problems. When the helmet will be tested, a dummy head will be placed into the helmet. The dummy head will not fit into the helmet when the pads will be placed over the foam. The pads themselves have no real area to be placed. For example, a circular pad is placed at the top of the helmet normally. When it is placed in the foam helmet, there is not enough room and only the edges of the circular pad touch the foam, while in the normal helmet most of the pad touches it.

I have taken one of the prototype helmets and have cut down the foam evenly throughout to about 4/10”, which is roughly a third to half the thickness of the remaining helmets. This new uniform thickness can fit the padding quite well and I personally believe it is the right choice. However, the remaining helmets will remain thicker and softer motorcycle padding may be used to replace the tougher army padding. The test results will show which method provided better data.

Some other work was done this week including drilling holes into all three helmets in the machine shop. The Kevlar is difficult to drill through because the drill bit dulls quickly and had to be changed at least once. In addition, the suspension systems were attached and screwed onto each prototype helmet because the dummy testing head must be strapped in tightly.

**Future Work:**

The only thing left to do is make a display helmet for the presentation day. Once the remaining materials arrive then the final helmet will be completed.
**Hours Worked:**

A total of 10 hours have been worked on the eleventh week.