Much of this week was spent making the second shell. This time, the shell was made using the spindle cutouts rather than triangular ones. Reasons for doing this included: easier final assembly; better strength of shell; and better finish/smoothness to the final product. The expected results were accurate. The helmet assembly did go a lot quicker and less taxing on the builders. The shell took about two hours to assemble, while the triangular shell assembly took about 10. The cutouts for the spindles took about 6 or more hours to complete due to the difficulty in cutting and aligning the edges appropriately in layering the consecutive pieces. However, the triangular cutouts also took many hours since there were more cuts to make in total, only they were more simple. Below is a picture of the spindle cutting process. Each layer was taped down as it was completed and numbered. This assured that the layers would fit appropriately over the previous ones. The cutting was somewhat difficult and tedious, but in the end it paid off to have properly fitting pieces come together.

In addition this week, we contacted EPS foam companies regarding our EPS inner shell layering. We have the option to either buy a block of EPS foam and use tools such as a hot wire knife to cut out or shape, or we can attempt to make a CAD file of our designated shape and send it to the company to have them make it precisely.
Above is a picture of the completed spindle cutouts in the order in which they were to be applied to the shell mold. Eight spindles were made in total. Each was labeled with the number in which it would be applied and the front/back designation.

The application of the spindles went much quicker compared to the triangular piece assembly. A layer of epoxy cure was brushed onto the bottom layer of the spindle cutout. It was then stuck onto the previous piece already on the mold. Another light layer of epoxy cure was brushed on to the top portion of the piece to ensure the fabric was
completely reacted. After each two layers of Kevlar application, more epoxy cure was mixed to ensure that it did not begin to harden before it was used.

The finished, dried, shell can be viewed above. One of the problems we faced in this procedure was creating a proper overhang of material. The new shell was supposed to be slightly extended in length beyond the original mold. However, as the fabric extended over the edges, it became wrinkled, especially on drying. This is a problem we will have to discuss.