Work Completed:

This week we managed to design the bracket in order to attach the linear actuator to the servo motor horn. The original design was not very stable and was difficult to manufacture. It had the linear actuator being mounted into a block and a bracket would go through a hole on the linear actuator and from that a sheet would attach and track wheels would stop the actuator from spinning. This elaborate and unpractical design was discarded can be seen in Figure 1.

Figure 1: Original Design for Elevator Mechanism.

Possible alternatives include taking apart the base of the linear actuator and mounting it directly to the servo horn without using a bracket. The base of the linear actuator however contained gears with lubrication and it seemed like a dangerous and not very feasible task. With the help of serge replaced with a more efficient design.
The new design required us to mount the servo motor upside down onto the base to avoid a protrusion that is at the base of the linear actuator. The bracket that was design was consistent of two parts. The first part was a 5” x 5” square with a 1” diameter circle in the middle. The circle in the middle was used as a clearance for the screws and a small protrusion that pops out of the servo horn due to the servo motor. The square had four screw holes in it in order to be attached to the servo horn. This was all done in the machine shop using the miller. Another circle not as deep 1.25” in diameter was also drilled on top of the 1” diameter circle. This allowed for the next part of the bracket to fit into the first part directly. This pocket fit would later be reinforced by pressing it down with heat and welding the two pieces together.

The second bracket consisted of a hollow cylinder 1.25” in outer diameter and .8” in inner diameter this bracket was constructed using the lathe. The .8” diameter hole was where the top of the linear actuator would be placed and it would be welded on to the first piece. The linear actuator would be top heavy if placed upside down so the hollow cylinder was made .75” high so that it would have a firm grasp of the linear actuator. The second bracket had a hole drilled right through it and then that whole was threaded. Set screws were placed in the holes it keep a firm grip on the linear actuator. After this was completed everything was put together and was very firmly placed.

![Completed Bracket](image)

We attempted to contact the client and when somebody finally answered we were informed that the school was out until February 25, 2008. We were also told that Sam’s family moved with very short notice all the way to Tennessee. We are attempting to contact them.

**Future Work**

The next step is to eliminate the rotation of the linear actuator. This is going to be done by adding a hollow tube and a rod one attached to the servo horn and the other to
the linear actuator. We need to consider is the wiggle room that the rod and tube provide. We will begin on that as soon as possible.

**Project Review**

The mechanical aspect is going smoothly. The microprocessor has been ordered and we will work on that too. The project is flowing smoothly but there is still a lot to be done. Finishing a bracket puts the project a step closer and helps us visualize what it will look like as a finished project.

**Hours Worked**

25 hours worked this week.