

Individual Report – Nathan Skyrme

While overall the line launcher came together fairly competently and performed reasonably well, this however does not mean that there weren't an array of issues that occurred during each phase of production that then carried over into the final product and its performance. Each issue we had with the launcher can be placed at the fault of either time management or team participation. Due to these two key issues, several of the criteria that our launcher was supposed to operate in line with, were not met.

On the day of presentation, the launcher was able to achieve a maximum distance of approximately 4-metres and had an acceptable accuracy. As a result of poor time management due to factors outside of my control, such as the workshop technician not being in, we were not afforded any time for testing prior to launch ahead of time enough to create adjustments or change any element of the design, so we were fortunate that we were able to reach any distance. This meant that we had to try and guess the angles of projection on the fly, rather than having been able to determine these mathematically. We were also not able to launch using an electrical impulse, as is required by IMechE in the design specification. This then meant we had to launch manually, which on top of the missing angles, meant we had a very inconsistent launch. We had planned to use a solenoid connected to a 9-Volt battery to lock the launcher in place and allow firing when desired. The solenoid I had purchased however operated magnetically, where I believed it was a spring based pull back system, this was not discovered until it was far too late to correct. The magnetic solenoid would've jammed and not had the force required to be pulled from the launcher, leading to the pin likely jamming.

As a further result of time management as well as team participation, the line was not able to attach very easily or quickly to the launcher. The line was attached via a small hole in the top of the line holding cylinder. Threading and tying/untying the line each time was a somewhat awkward and time consuming process. This method also meant for each distance a new piece of rope needed to be cut. Additionally this method held a far higher risk of the rope tangling and not firing correctly, which happened a few times during launch. Since this was a last minute decision we didn't really get a chance to test prior, so on launch weren't entirely sure how the rope should be placed to correctly counteract this.

In my role as team leader I believe I performed professionally and guided the team well, despite only having as much experience with a challenge such as this as the rest of them. Despite facing severe issues with team participation, I feel that I handled this appropriately and effectively held the project together. Through my role I ensured that all parts of the project were completed to a high standard and that each member both knew what they were doing, and was producing work that would assemble into one completed launcher.

Ideally if we were to do this again production would start much sooner than it did, every issue and oversight we had was an issue stemming from poor time management. While I don't believe the fault of this lies on the group particularly as we were prepared ahead of time, factors that were out of our control lead to a large delay. The ideas we had were mostly solid and worked both in the final product and in theory, so in terms of the way we intended to construct the launcher I don't think anything would need to change.