



Release Lanyard Project

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Team 5

**By: Andrew Baker, Tim Haynes, Styson Koide,
David Lofgreen, Carly Siewerth, & Chris Temme**

Overview

- ▶ Problem Statement
- ▶ Current Design
- ▶ New Design
- ▶ Testing
- ▶ Gantt Chart
- ▶ Conclusion
- ▶ References

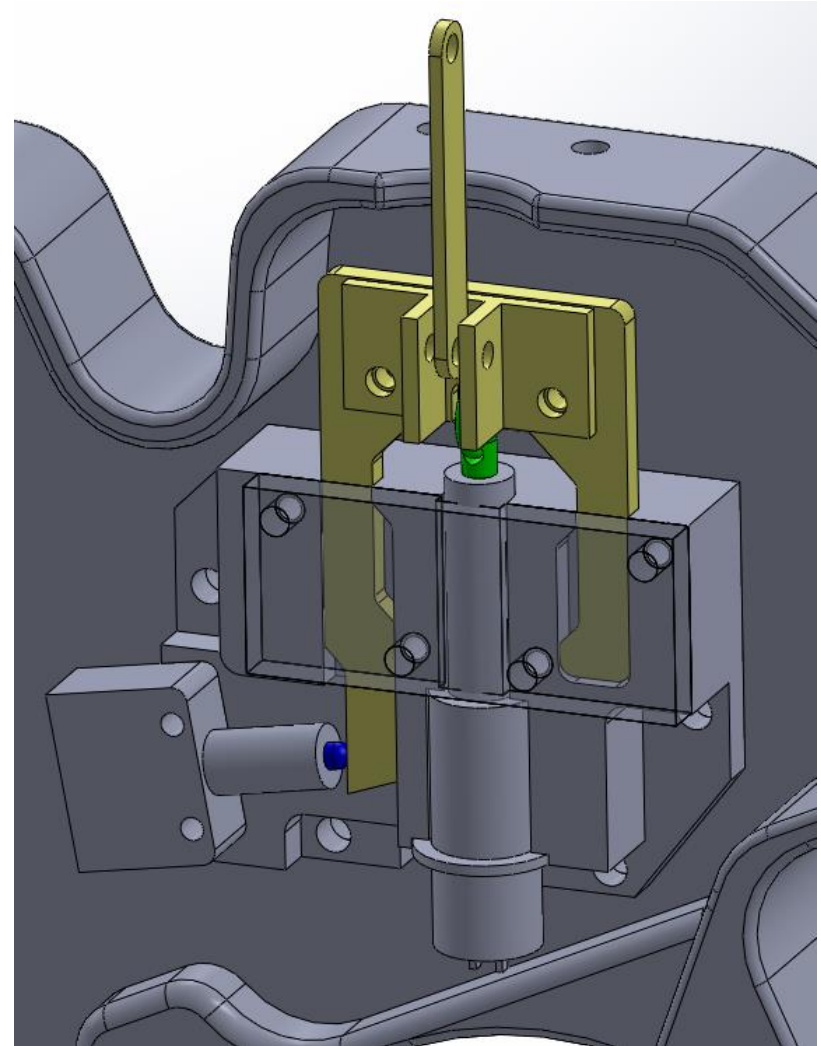
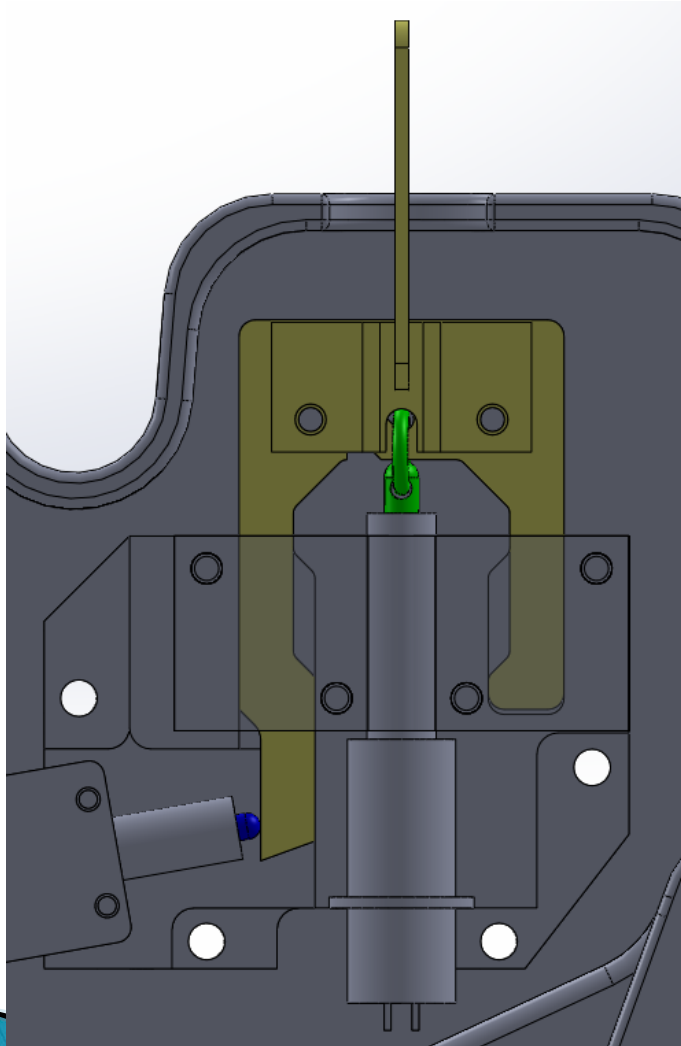
Problem Statement

- ▶ Issues with freezing temperatures and debris
- ▶ Issues not activating weapons system
- ▶ Issues with poor installation
- ▶ Keep new design under \$300

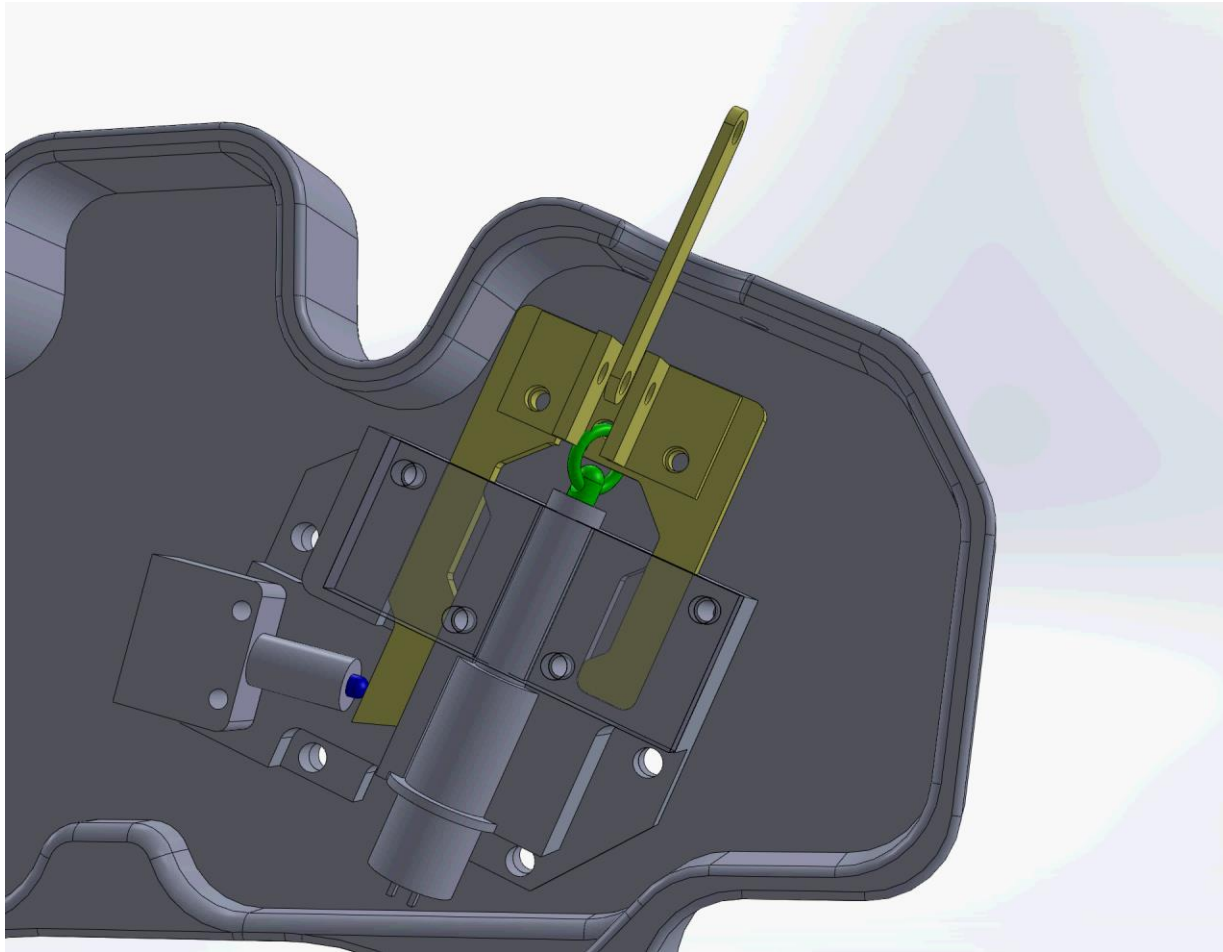
General Constraints

- ▶ Temperature Range -50°C to 150°C
- ▶ Activation Force of 50N
- ▶ Breaking force of linkage 75N

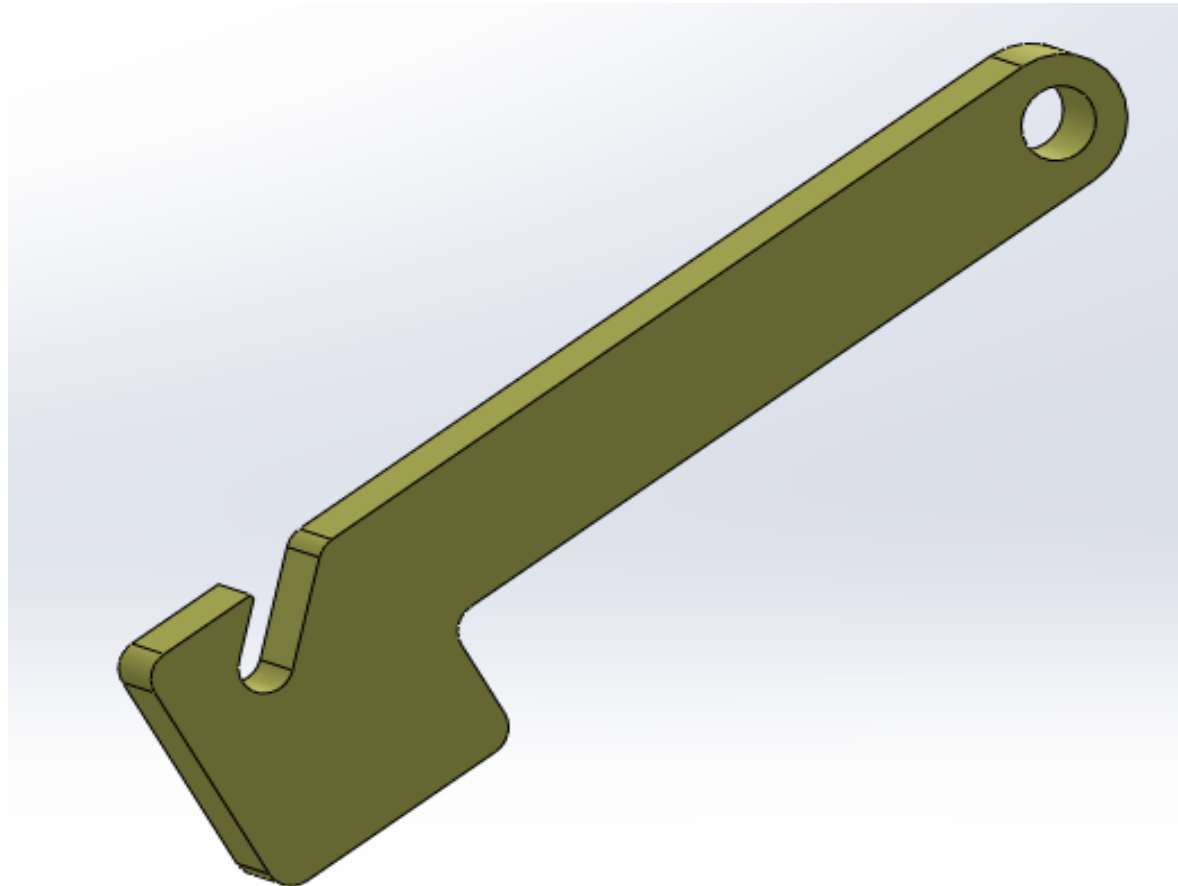
Current CAD Design



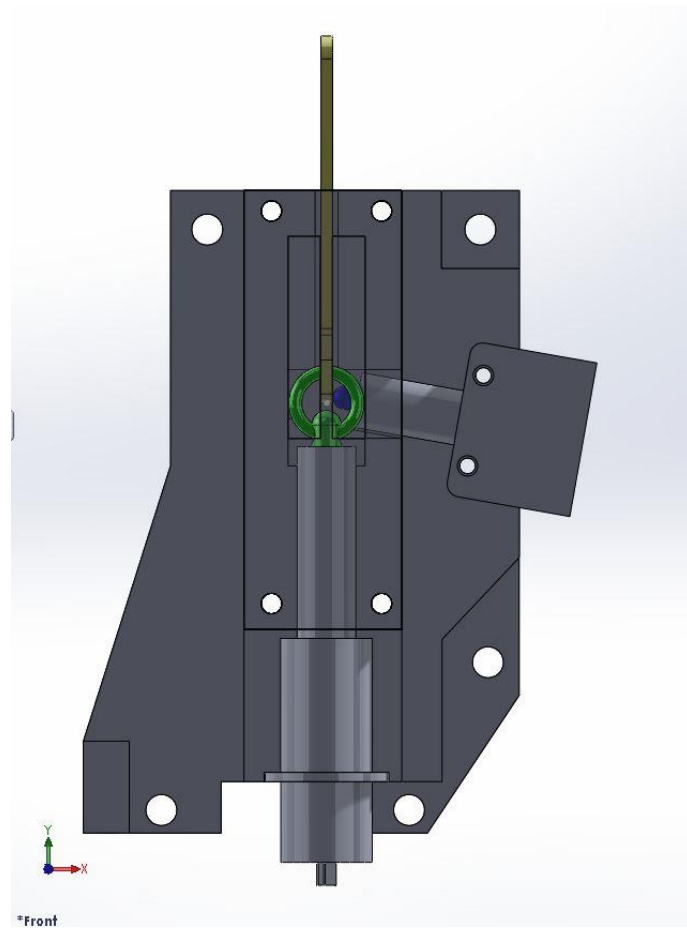
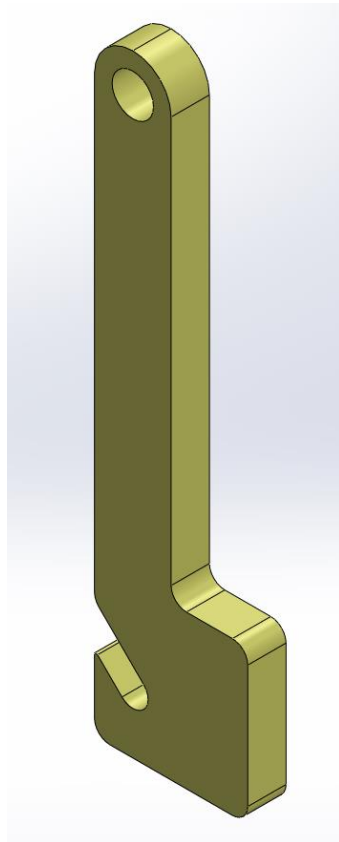
Current Activation Slider



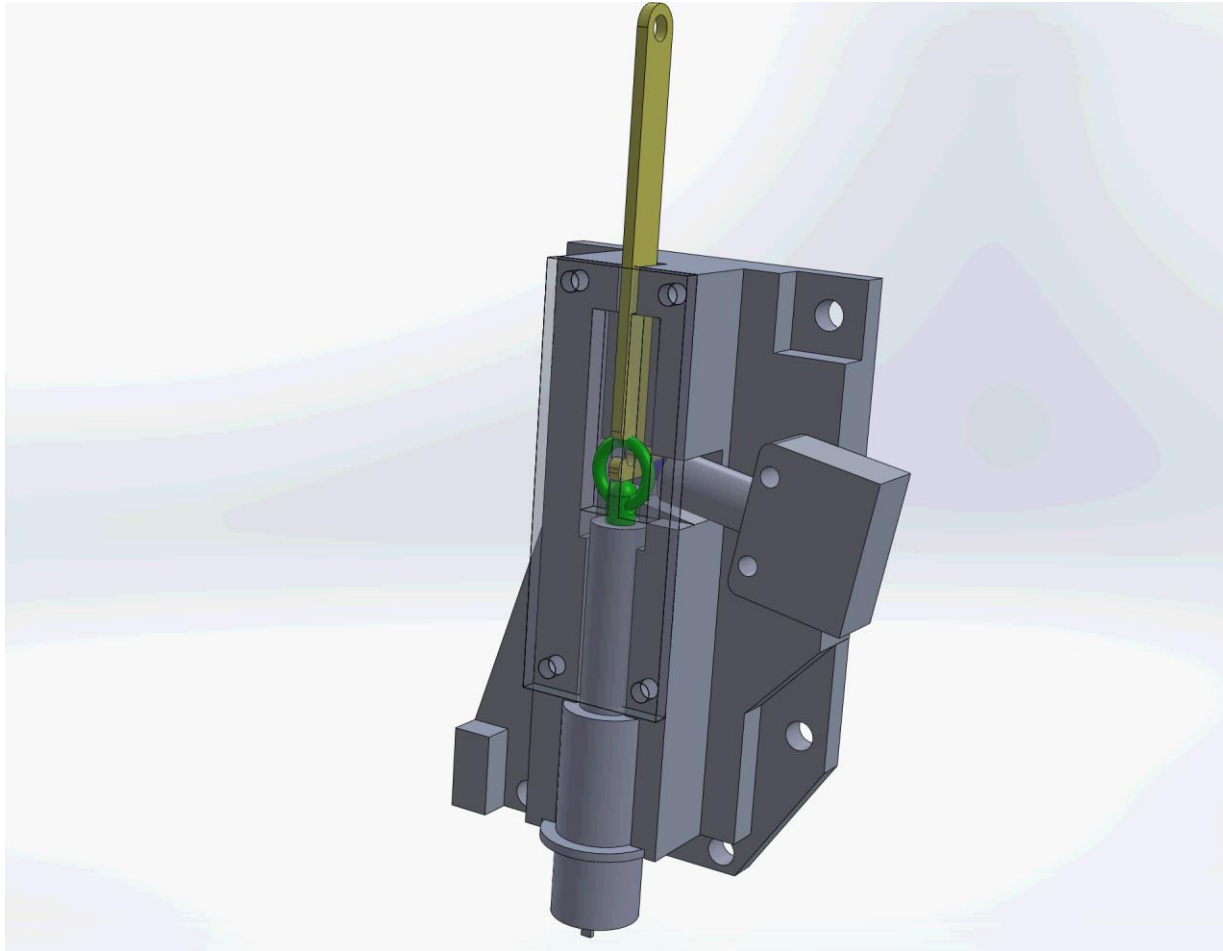
New Slider Design



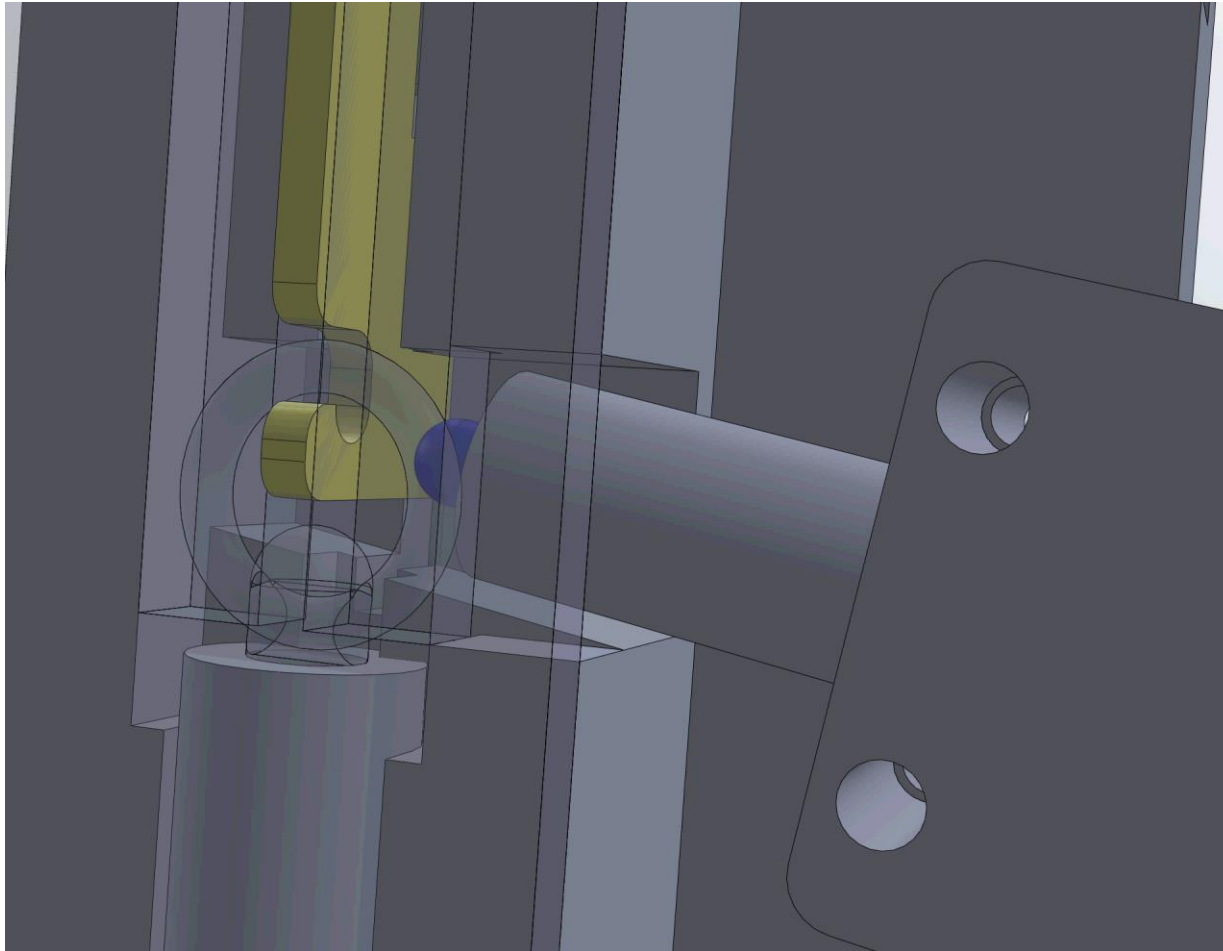
New CAD Design



New Activation Slider



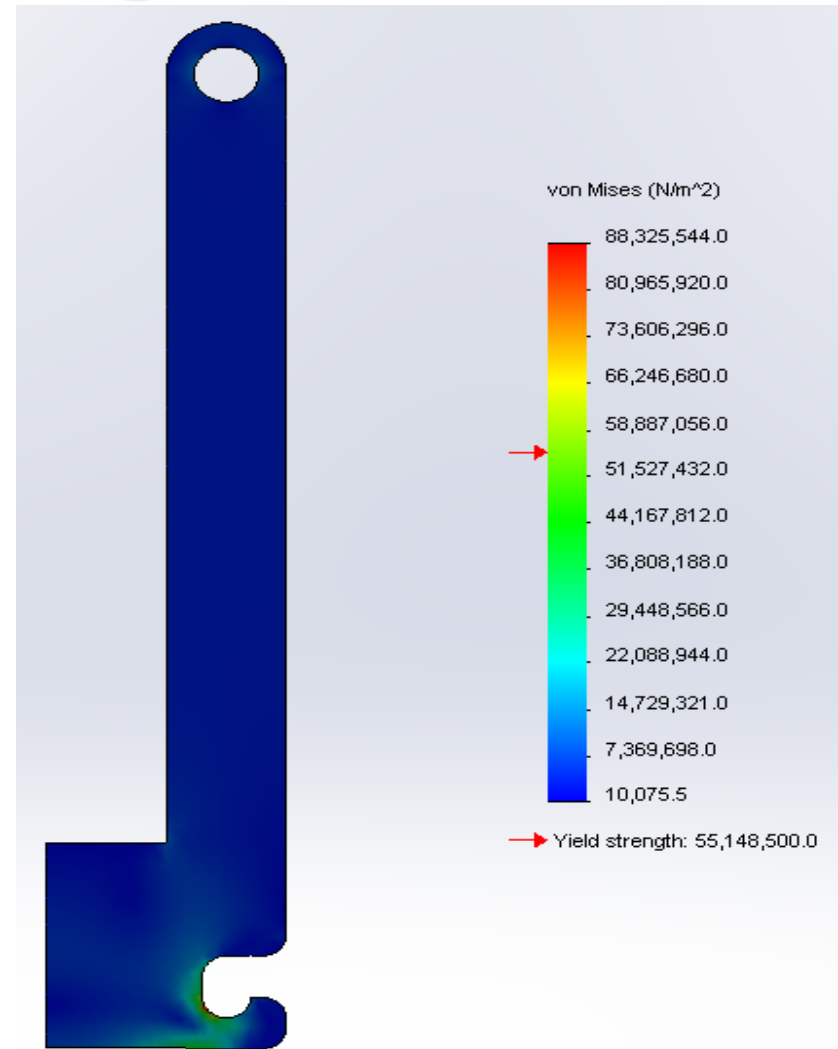
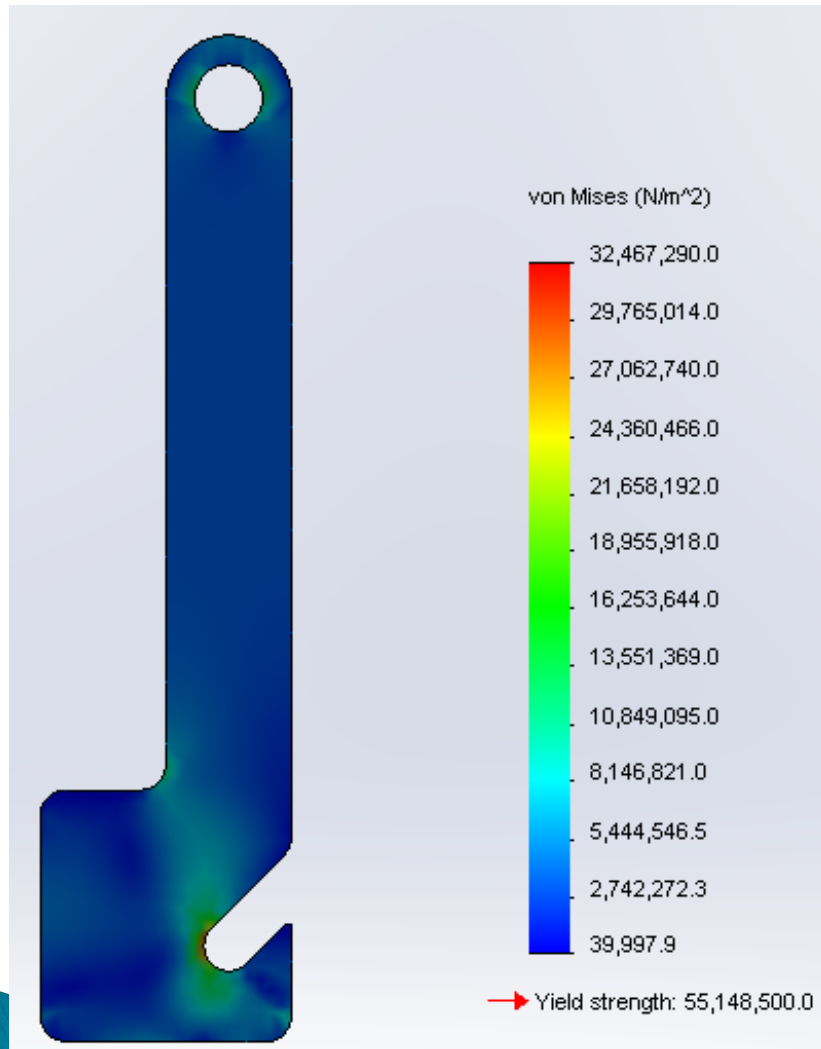
New Activation Slider Cont'd



Material Testing

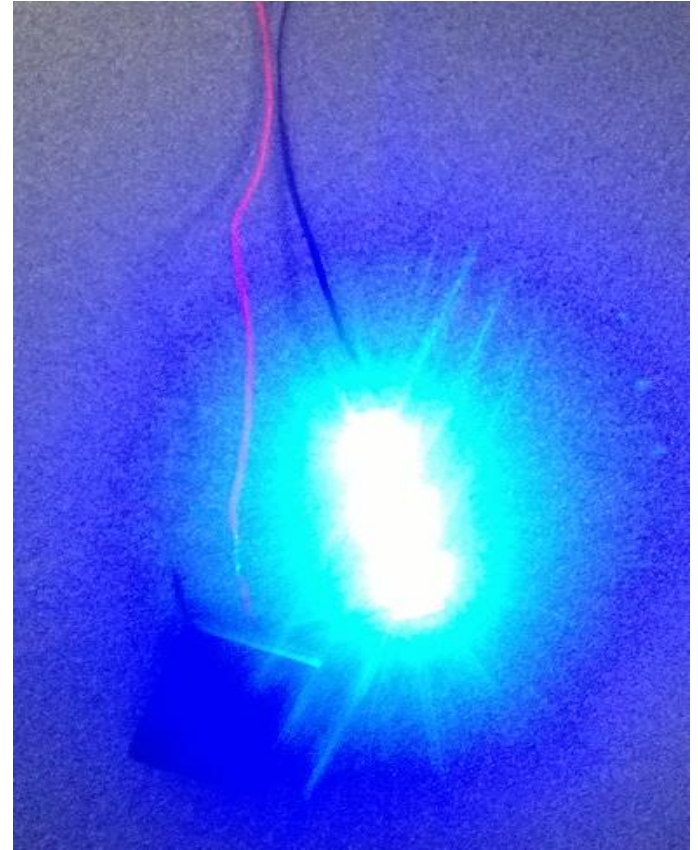
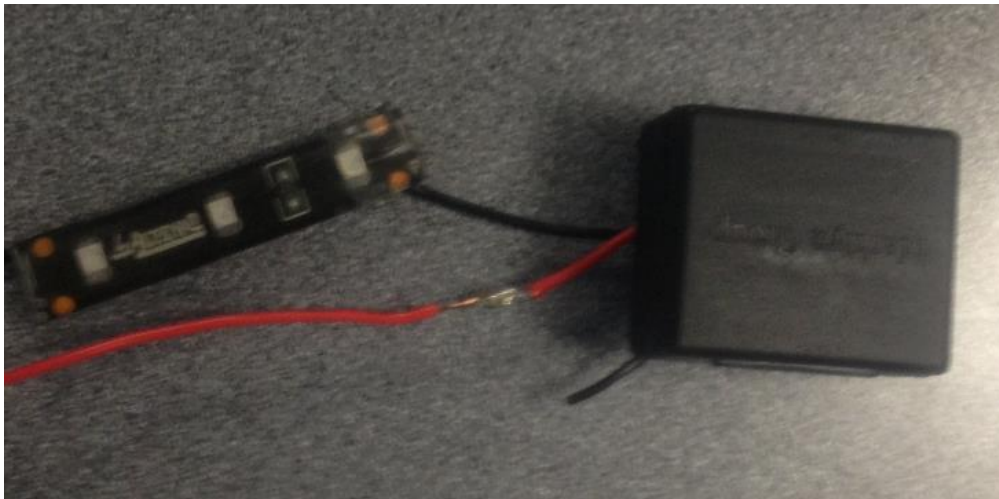
- ▶ Tensile testing
 - Heating material from room temperature to $\approx 200^{\circ}\text{C}$
 - Cooling material from room temperature to $\approx -200^{\circ}\text{C}$
 - Cyclic testing
 - Heat material to 200°C then cool down to -200°C

FEA Model Testing

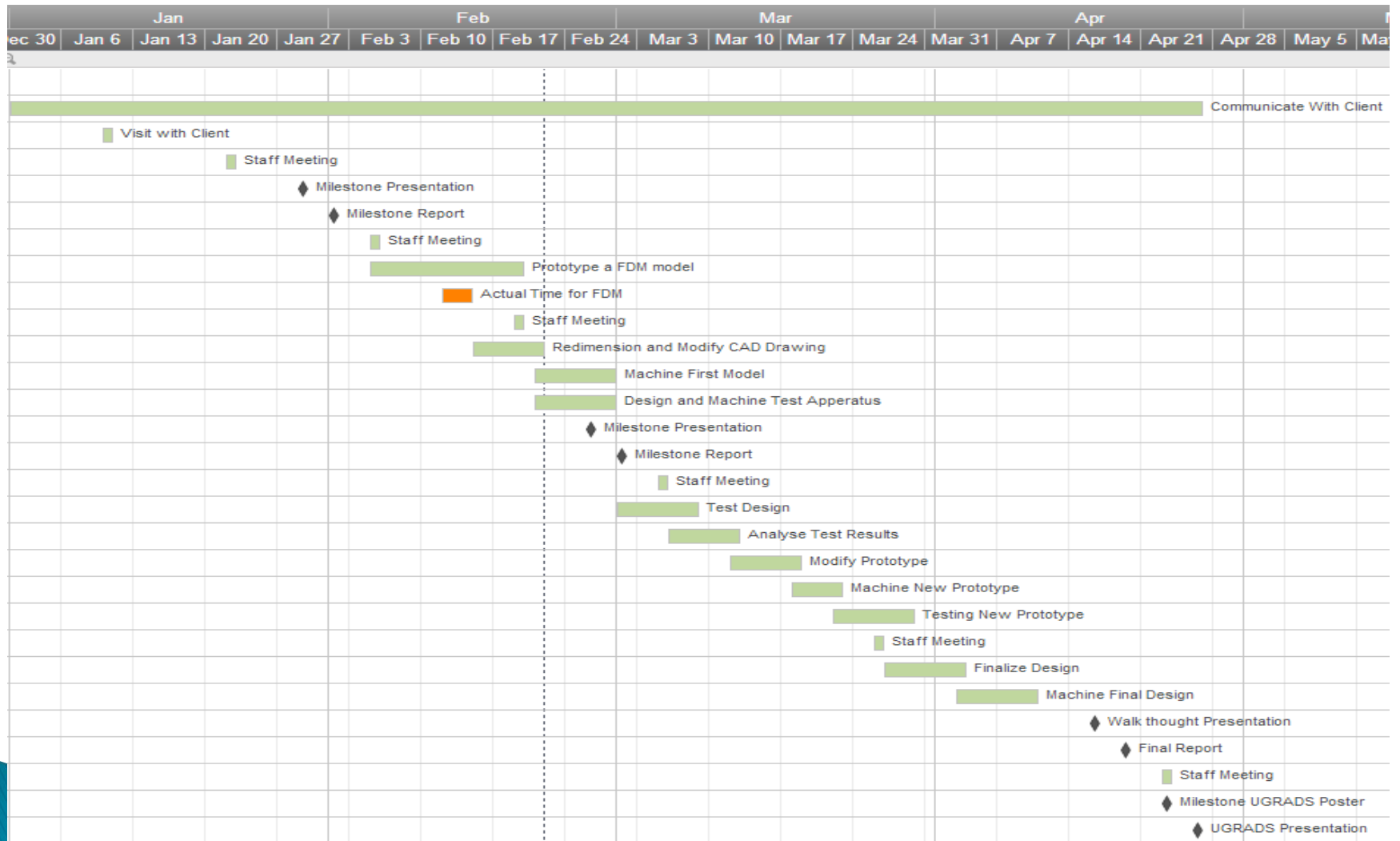


Model Testing

- ▶ Materials
 - Battery
 - Light
 - Electrical wire
 - Battery mount



Gantt Chart



Conclusion

- ▶ Problem Statement
 - Issues with freezing temperature and debris
 - Not activation
 - Poor installation
- ▶ Current Design
 - Failing under extreme conduction
- ▶ New Designs
 - Include new slider arm, battery mount, and switch placement
- ▶ Gantt Chart

References

- ▶ Stephen Larimore
 - Raytheon Department Manager
- ▶ Kelly Convington
 - Raytheon Mechanical Engineer
- ▶ <http://chemistry.about.com/od/nitrogen/f/What-Is-The-Temperature-Of-Liquid-Nitrogen.htm>

Questions?