



## **February at-a-Glance**

During the month of February, our team focused heavily on manufacturing subsystems as well as conducting various tests. In mid-February, the team drove out to St. Albans in Vermont for a launch attempt of last year's rocket. The team was very successful in demonstrating the capabilities of our rocket assembly methods and our ground-ejection capabilities. Unfortunately, due to high winds, we were not able to safely launch the rocket. In addition, the team elected the 2022-2023 officer board and will begin transitioning over at the end of the school year.

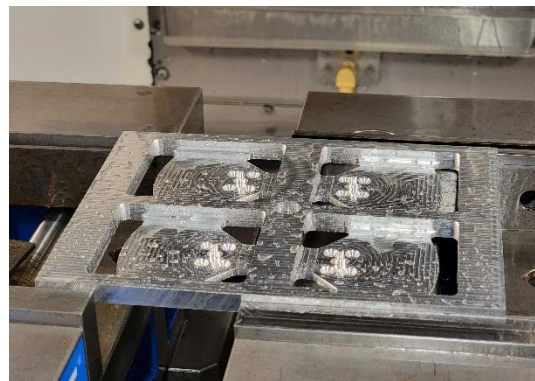
Looking forward, we intend to make another launch attempt before the end of the academic year and continue manufacturing, assembling, and testing subsystems of the rocket and payload in preparation for IREC in June.



HPRC Recovery Sub-team members testing the single end deployment system on top of Gateway Parking Garage!



Members of Airbrakes Sub-team testing fin deployment.



Completed milling operation for airbrake fins.

## Rocket Division

Altair



### Aerostructures

The aerostructures team continued to practice tail cone and fin can layups and will begin the final ones as D-term begins. We've made progress with our ANSYS composite analysis and are finalizing our simulations. We also redesigned and began manufacturing a fin alignment jig and have been working on designing a tube cutter.

### Airbrakes

Over the course of the past month, the airbrakes team was able to finish the bulk of the manufacturing for the final assembly and conduct an initial test with the servo mounted in the redesigned structure. The test proved to be successful and provided good evidence that the system will function mechanically. Going forward, the team will work on wrapping up manufacturing and



conducting a static load test on the final assembly to simulate the anticipated drag on the airbrakes in their fully extended configuration.



## **Couplings**

This month, the couplings team finished the CAM for all the lathe and mill operations. Machining will start in D-term once materials arrive. Our collet wrench torquing mechanism proved to work after running several assembly tests and we performed a test assembly of the motor retention system.

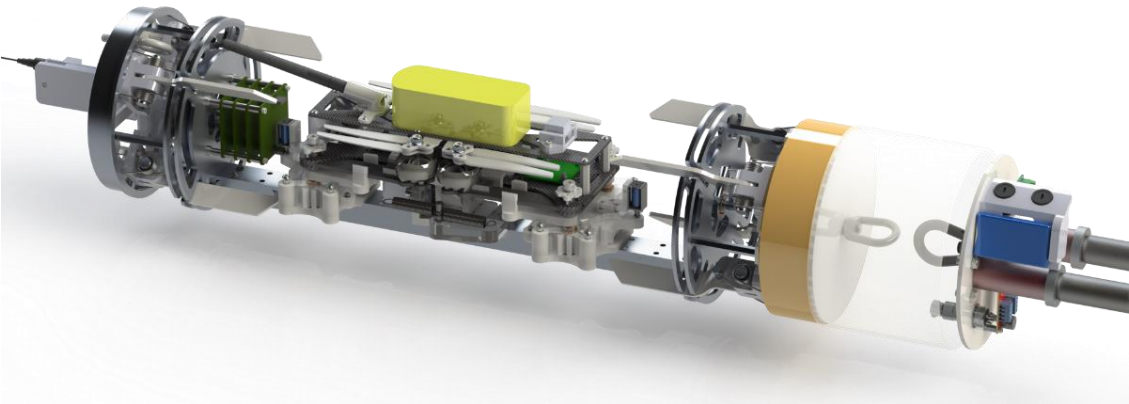
## **Recovery**

The recovery team made significant progress in February. The team modified and prepared last year's rocket for the launch in St. Albans by cutting new lines and programming the recovery bay. We also performed several drop tests off a WPI parking garage to test the single ended system. After finalizing the design of this year's e-bay, we began machining the plate for the bay and 3D printing parts for the sled.



## Payload Division

Tarazed



Over February, the quadcopter went through many revisions that brought us to our final model. We manufactured and assembled three prototype versions of our final quadcopter to check the fit of all the components and adjust the CAD model. The team began practicing machining the pins for the quadcopter locking mechanism and sent out the carbon fiber plates for machining. The mechanical team has been working on the final iterations of the payload CAD and began making prototypes for the retention system.



## Electronics and Programming Team



## Avionics

The electronics team completed assembly and testing of our custom CAN boards. This testing successfully demonstrated inter-board communication and stacking capabilities. The team finished the design of our custom printed circuit boards which will be manufactured over Spring Break.

## Software

The software team continued working on flight software for the rocket and is working towards implementing dynamic waypoints for our quadcopter payload mission. The ground station team conducted a successful test at the launch attempt, demonstrating our capabilities to receive and display real time data from the rocket.

