



## **December & January at-a-Glance**

During the month of December, our team conducted our Internal Design Review where members of each divisional sub-team presented designs, answered questions, and engaged in constructive criticism with our whole team. We also conducted five successful ejection tests at our sponsoring Test Devices facility with the help of their engineers.

Thank you, Test Devices, for hosting us at your facility!

The month of January started off with the completion of our Tinkerbox Cohort 6 program with the I&E department here at WPI. Thank you Tinkerbox for your contributions and partnership with our team once again!

Looking forward, we are aiming to launch our last year rocket at Lake Winnepesaukee before the end of C-term. We are excited about experiencing a launch after the challenges and delays faced during the height of the COVID-19 pandemic!



HPRC performing their internal design review, where every sub-team presents about the design, manufacturing, and assembly of their subsystems.



Members of Recovery sub-team building a 3D-printed E-Bay.



Team members setting up ejection test.

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## Rocket Division

Altair



### Aerostructures

This month, Aerostructures has been finishing up verification and prototyping for the fin can and tail cone. The ANSYS group continued learning composite analysis, and the fin alignment jig group has been working on laser cutting and assembling the jig. The composites layups group has also been practicing more layups for the tail cone using fiberglass sleeves.

### Airbrakes

Over the course of December and January, Airbrakes focused on making design improvements based on feedback from our prototype. Currently, the sub-team is focused on writing and executing manufacturing plans for critical components of the airbrakes mechanism and continuing work on the control system design.





## Couplings

Couplings has been working hard on CAM for the couplings and motor retention machined parts. They plan to finish within the next week and start machining them in the Washburn Shops.

## Recovery

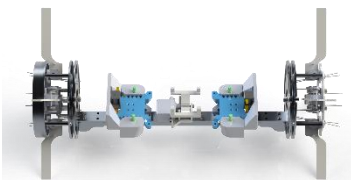
Over break, Recovery performed FEA on their E-Bay plate, made edits, and finalized their design. Back on campus, they learned how to 3D print and assembled a prototype of the E-Bay. Currently, the sub-team is working on CAM and will begin machining the plate soon. They will continue to adjust on the E-Bay and will perform a drop test to verify the single-end deploy system will work as desired.



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## Payload Division

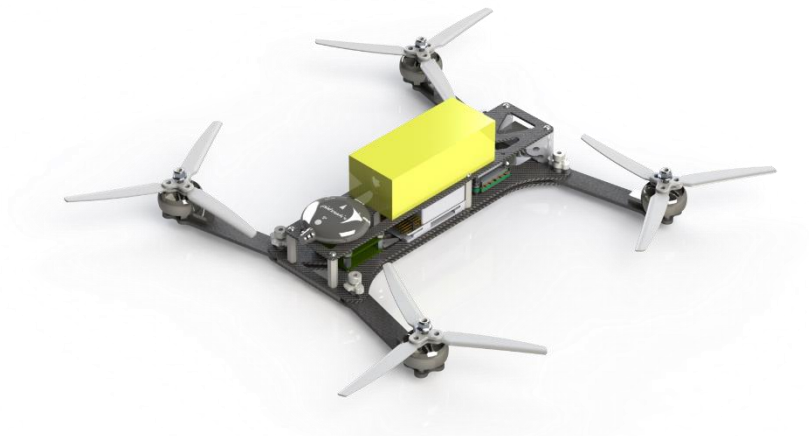
Tarazed



## Mechanical

Since the last time, we have fleshed out our CAD models enough to start prototyping! We are currently working on integration and wire management as well as finalizing different sub-assemblies.





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## Electronics and Programming Team



## Software

The team conducted telemetry tests for both ground station and payload to gather data on signal strength over certain distances with the components being used in each system. The payload EnP team picked an antenna for the drone and researched ways to update waypoints during flight. The Embedded Systems Software team continues to develop the state machine to control the avionics and looks to test on the recently delivered custom control boards.

## Avionics

Electronics is working to complete the layout and routing of the custom PCBs for the rocket. The team has compiled a BOM and is looking to order the boards soon. A custom CAN breakout board is being tested to practice fabricating PCBs and verify several features for the final rocket avionics boards.

