

Spacecraft Design Capstone

University of CINCINNATI CEAS

Goal: Design a rocket carrying a scientific payload to exactly 10,000 ft What: International Rocket Engineering Competition

Where: Midland, Texas

596

580

564

548

532

- 516

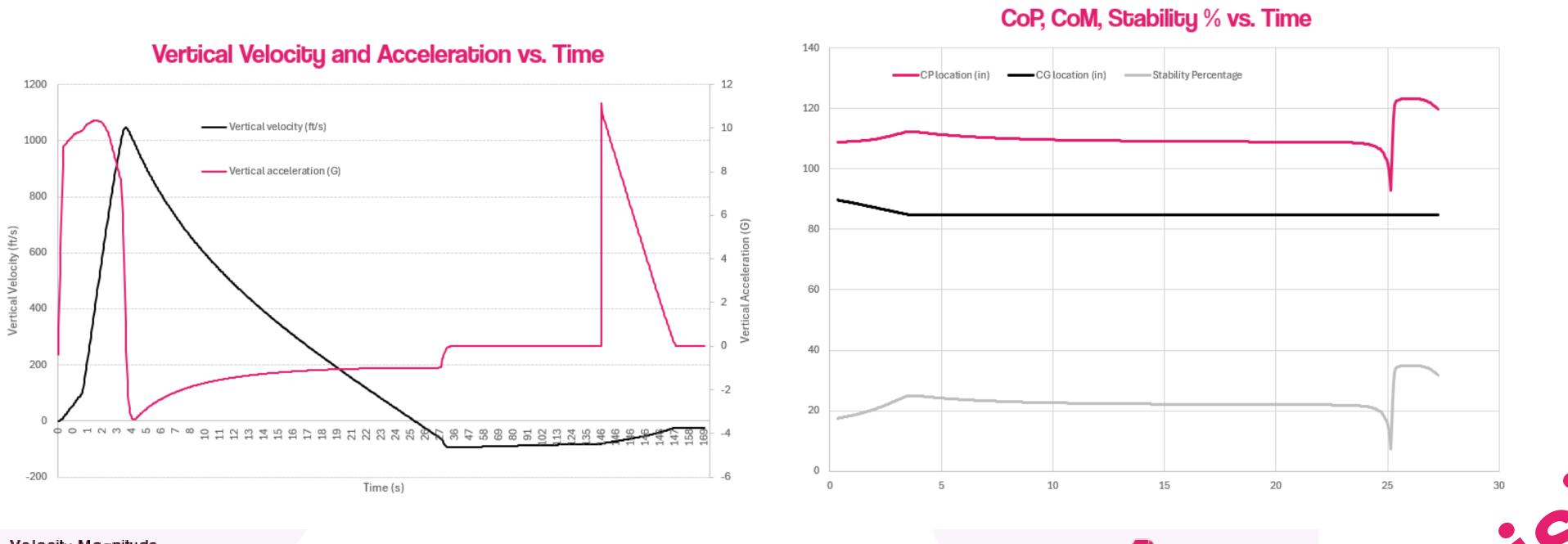
Stats:

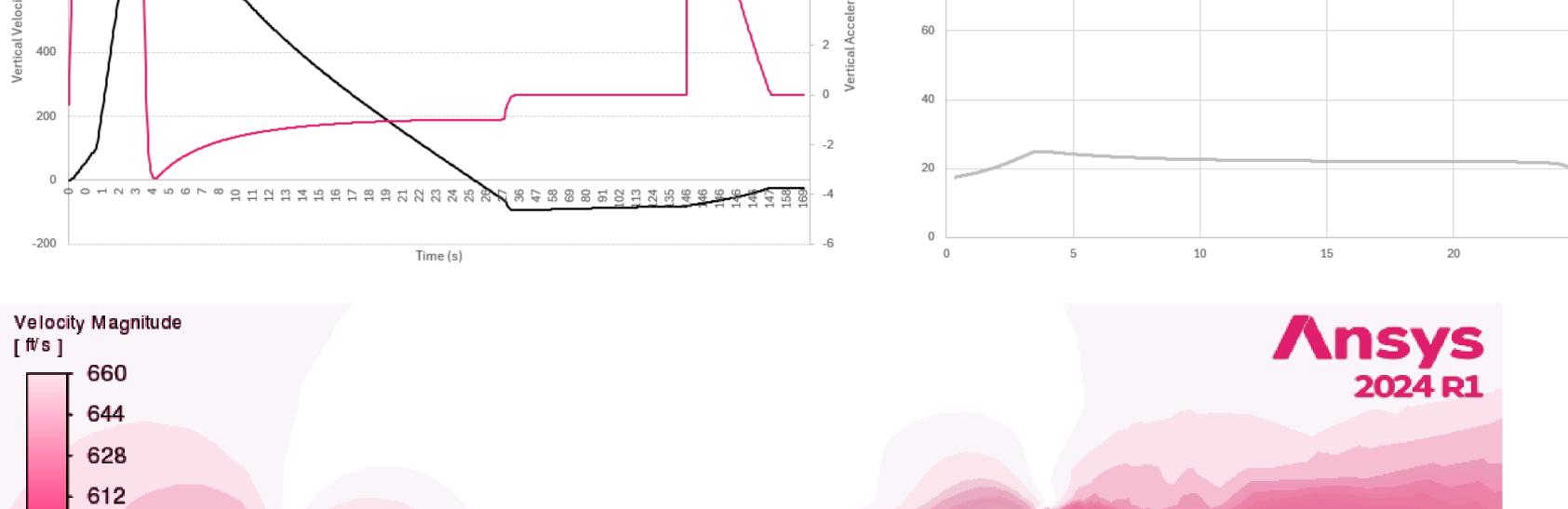
- Length: 10.8¹ Diameter: 5.5"
- Max. Velocity: 750mph (0.996 M)
- Apogee: 10,000 ft

Motor:

- Max Thrust: 3710 N
- Burn Tlme: 3.9 s
- Total Impulse: 9,671 Ns
- Specific Impulse: 209s

Weight: 17.8 lbs





Metal-Tipped Fiberglass Nose Cone 30

Main Parachute

Avionics Bay Altimeter Key Switch **Altimeter** Telemetry RF Transmitter 9V Battery **GPS Transmitter** ն Battery Temp. Humidity, Pressure Sensor **Modular Sled**

Inertial Measurement Unit

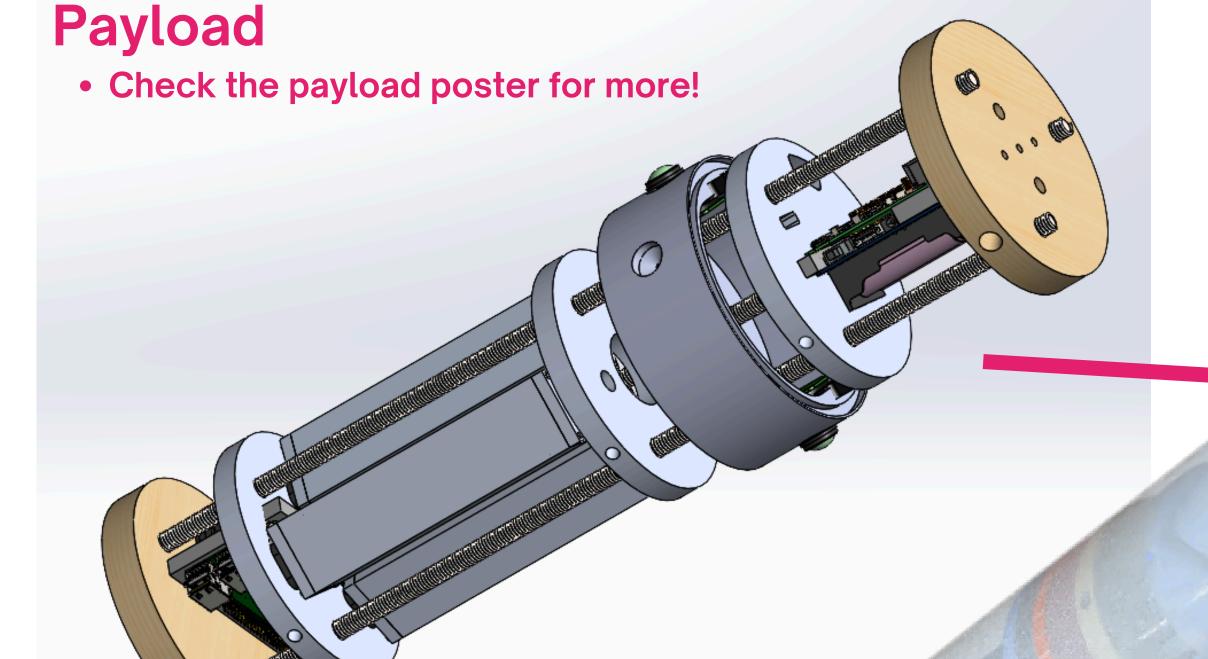
Main Deploy

Touchdown

Body Tubes

• Fiberglass composite wrapped Blue Tube





Drogue Chute

 Small parachute that slows the vehicle down for safe deployment of the main

MECO

Launch

Center of Pressure

Fin Can Basics

Center of Mass

- 1/16" bent sheet aluminum can
- 3/16" sheet aluminum fins
- Easy to replace fins compared to epoxy
- Check the table!

Flight Profile: 10,000 ft 1,100 ft/s Max. Vel. from launch site

Apogee Drogue Deploy

- Collin Gerwe Simulation
- Zak Upson Build

Derrick Hollins - Avionics

Launch Vehicle Team

Pierce Elliot - Capstone Lead

Ben Hunt - Launch Vehicle Lead

Christian Dierksheide - Design



