

ME, ECE, BE Capstone Design Programs

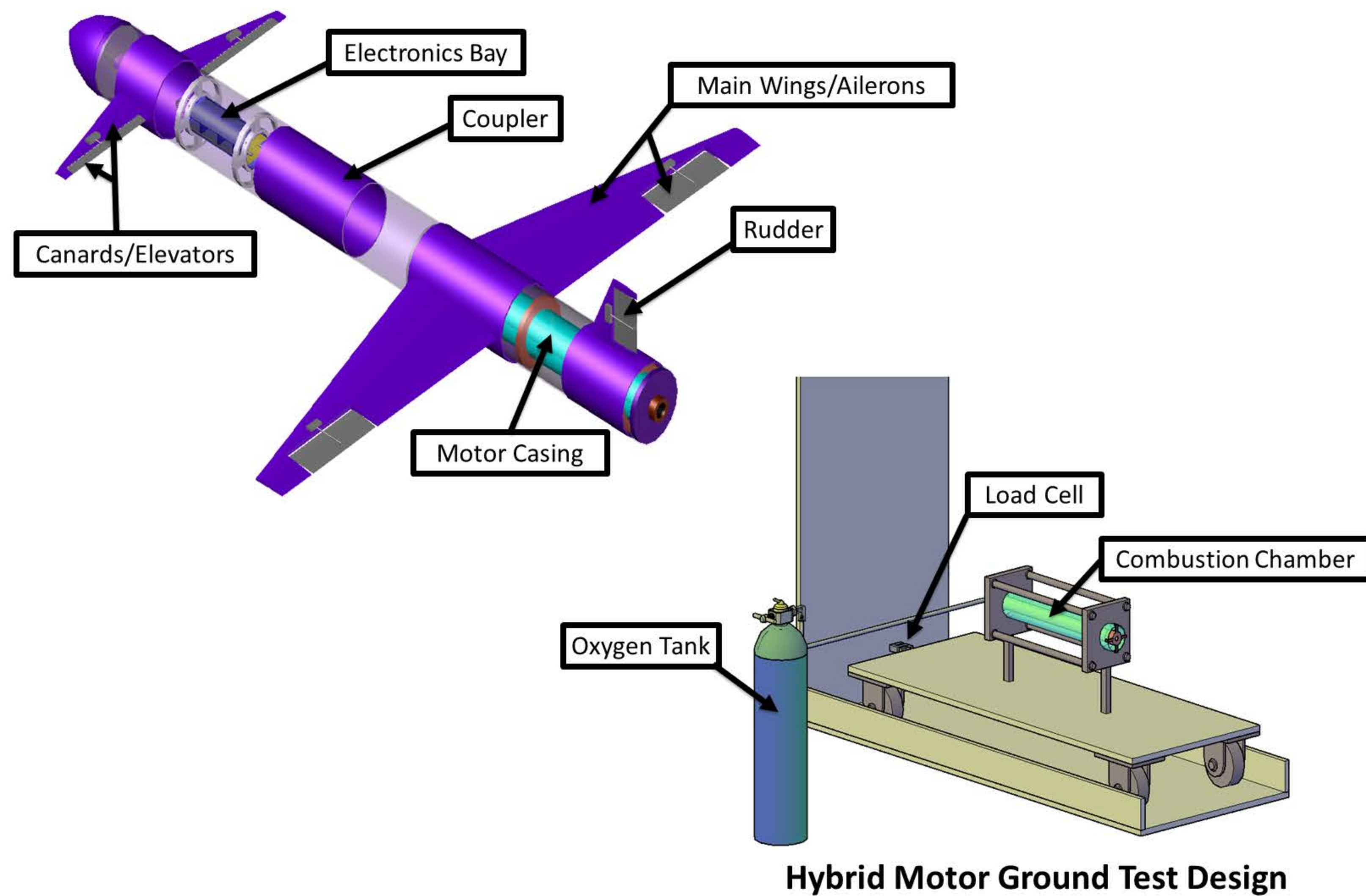
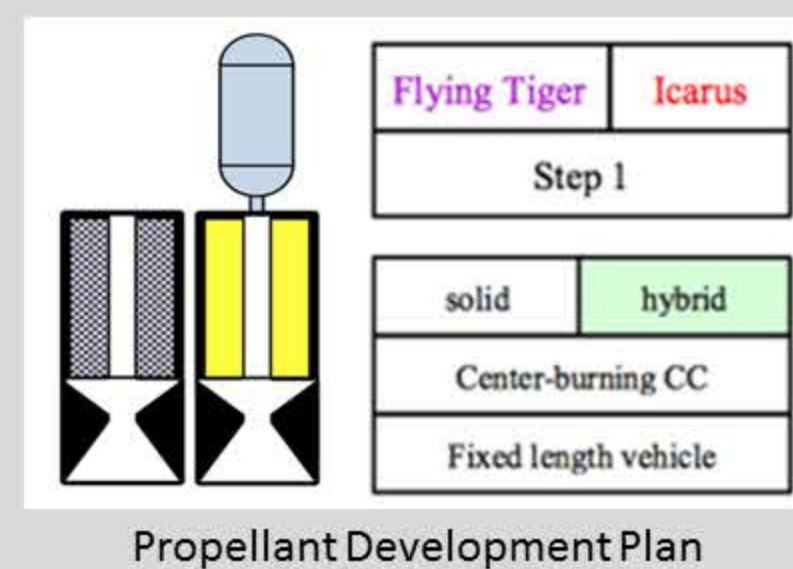


Team 20: Icarus Rocket Glider

John Aymond (ME), Nick Bohall (ME), Chris Burchard (ME), Hansen Jones (ME), David Ohlenforst (ME), Danny Pham (ME), Landon Johnson (EE), Justin Kilpatrick (ECE)

Background

- Demonstrate small scale design concepts for reusable launch vehicle
- Progressive development plan for propellant usage

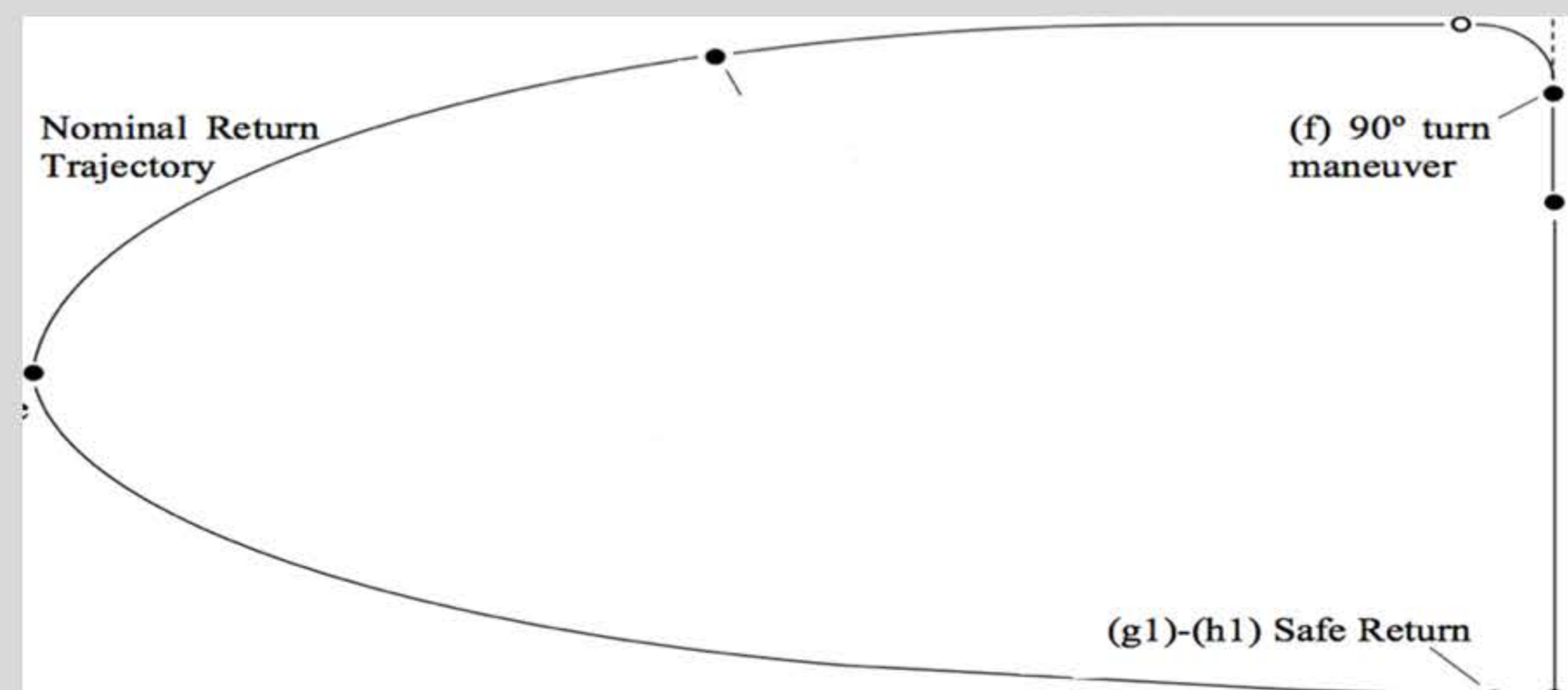


Safety

- Rocket Glider Design:**
- 120" Recovery parachute with manual deployment
 - Vehicle nose up upon parachute ejection
- Rocket Launch and Testing:**
- Complies to FAA Class 2 High-Power Rocket regulations
 - 2000 ft wireless ignition range
 - LSU Safety supervised and approved testing

Objectives

- Required Altitude: 1000-2000 ft
- Control authority maintained for more than 50% of glide
- Demonstrate a single turn towards the launch site
- Account for winds on launch day
- Design a ground test of a gaseous oxygen-paraffin wax hybrid rocket motor
- Further sponsor's research

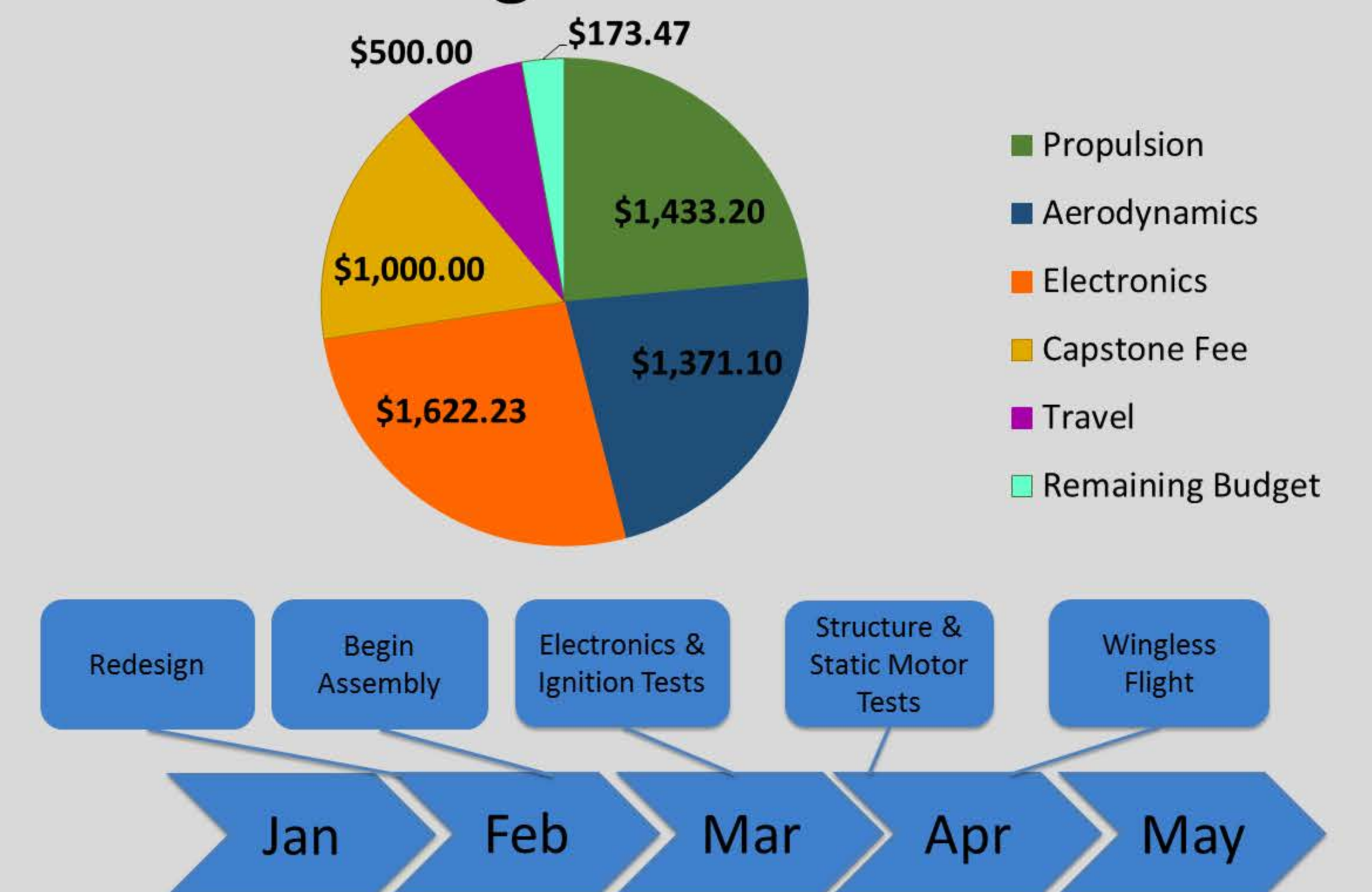


Representative Flight path

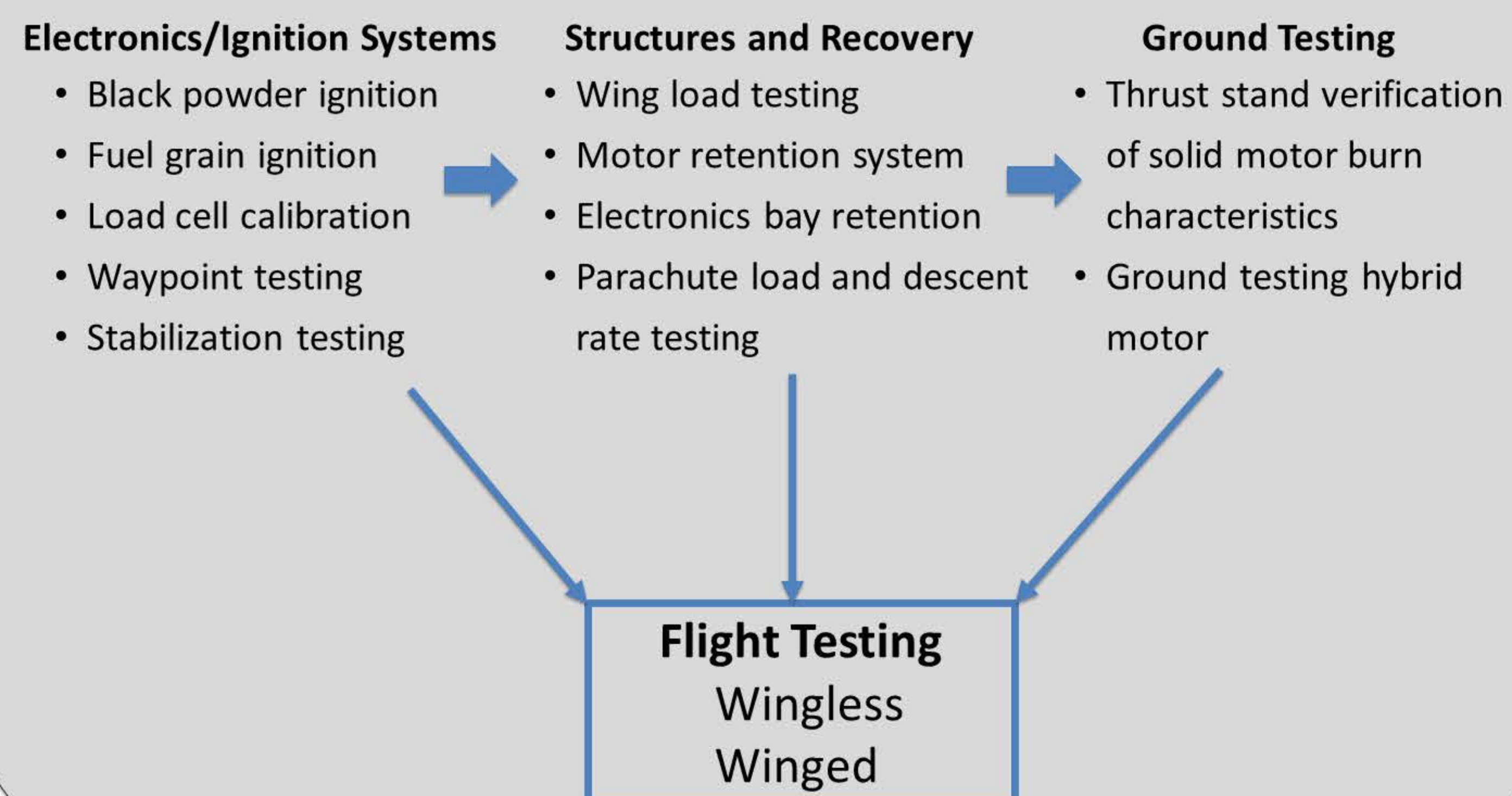
Vehicle Specifications:

Length:	81.25 inches	Dry Weight:	28 lb
Wingspan:	83 inches	Total Motor Impulse:	350.7 lbf-s
Body Tube Diameter:	6 inches	Average Thrust:	135.0 lbf

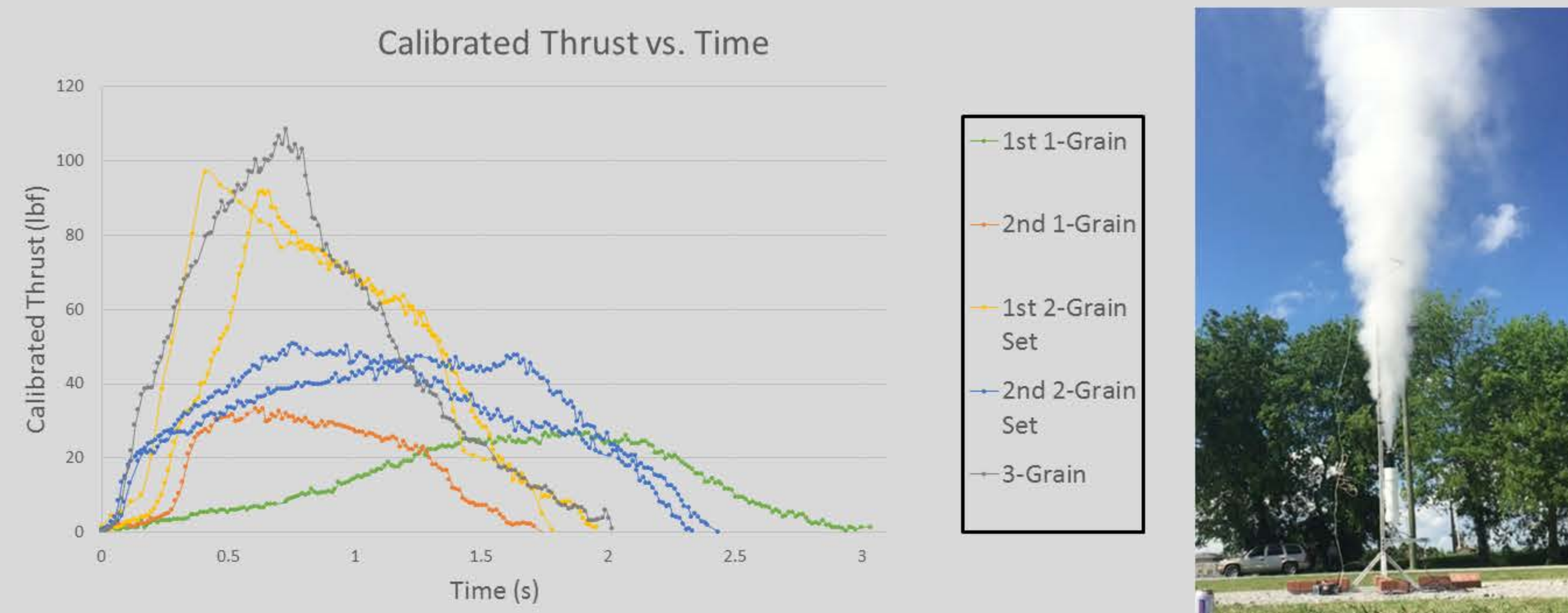
Budget and Schedule



Testing Plan



Motor Testing



- Showed repeatable casting, storage, and insulation methods for potassium nitrate-sorbitol (KNSB) propellant
- Investigated effects of moisture exposure and insulation thickness on burn characteristics

Vehicle Performance

