To Predict ▸ To Design ▸ To Perform

College of

Department of Mechanical & Industrial Engineering

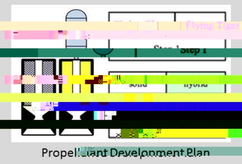
ME, ECE, BE Capstone Design Program

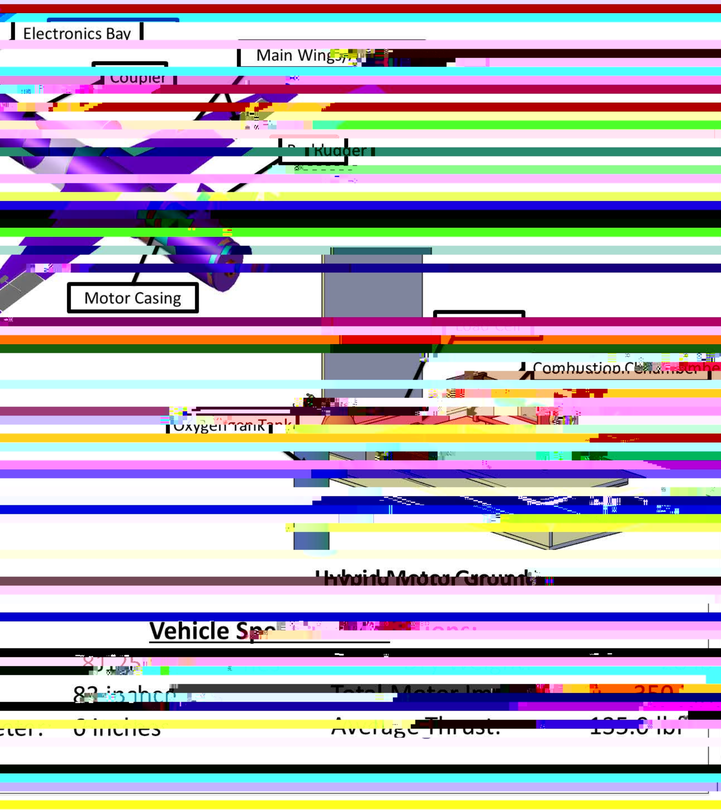
Team 20: Icarus Rocket Glider

Jo[illegible]

Background

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



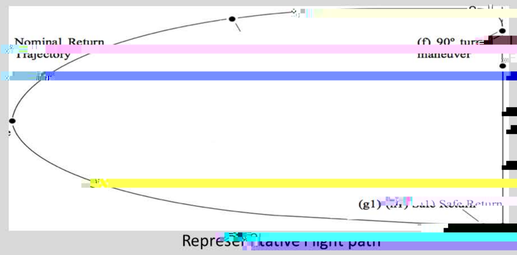


Rocket Glider I

- 120" Recovery parachute with [illegible]
- Vehicle nose up upon parachute [illegible]
- Complies to FAA Class 2 [illegible] Rocket regulations
- 2000 ft wireless ignition range [illegible]

Objectives

- Required Altitude: 1000-2000 ft
- Control authority maintained for more than 50% of glide
- Demonstrate a sin[illegible]
- Account for winds o[illegible]
- Design a ground test of a gaseous oxygen-pa[illegible]
- Further sponsor's resear[illegible]



Budget and Schedule

Vehicle Specifications

Length:	3[illegible]		
Wingspan:	83 inches	Total Motor Impulse:	350 lbf-s
Body Tube Diameter:	6 inches	Average Thrust:	135.6 lbf

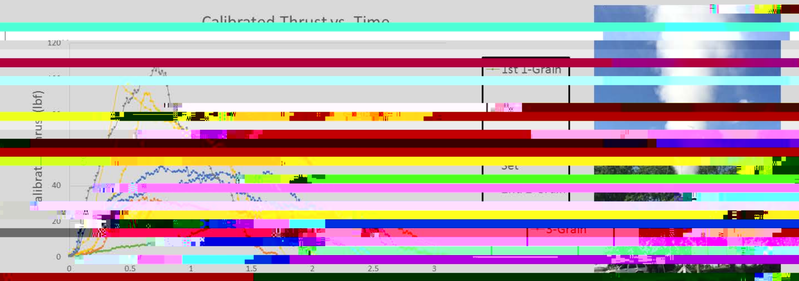
Testing Plan

Electronics/Ignition Systems
- Black powder ignition
- Fuel grain ignition
- Load cell calibration
- Waypoint testing
- Stabilization testing

Structures and Recovery
- Wing load testing
- Motor retention system
- Electronics bay retention
- Parachute load and descent rate testing

Ground Testing
- Thrust stand verification of solid motor burn characteristics
- Ground hot fire of hybrid motor

Flight Testing
- Wingless
- Winged



- Showed repeatable casting, stora[illegible] sorbitol / KN[illegible]
- Investigated effects of moisture expo[illegible] sure a[illegible] insulation thickness on burn characteri[illegible]

Waypoint Testing

- Demonstrate autopilot [illegible]
- [illegible] solution methods for potassium nitrate [illegible] to test
- 4° deflection of ha[illegible]
- 3/16" deflection of cana[illegible]

Wing te[illegible]

Sponsors: Dr. Adam Baran, The Louisiana Space Consortium (LaSPACE)