
Team Darwin

2016 CDR Overview

Slide show

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Changes since PDR

Interphases and Integration:

- The body tube length changed from 82in-87.5in
- The mass of the body tubes changed from 336oz-280oz.

Vehicle Criteria:

- Key switches are on the same side of the rocket not the opposite side
 - Back half of the body tube was 36in, now 28in.
 - Front half of the body tube was 27.7in, now 37.7in
 - There is a 2in spacer between front and back half
 - Adding accelerometer to e-bay
 - Nose cone is fiberglass with aluminum tip
 - From Animal Motor works
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Changes Cont'd

Ejection Charges:

- Descent slower from 17.6 ft/s to 16.5 ft/s

Payload Design:

- From 1 to 3 pieces of all-thread, from 3 to 5 nuts

Motor:

- Eliminating bulk head on motor casing, replaced with metal device that holds the 1-bolt and shock cord
- From K1440 White thunder to 5 grain K1200

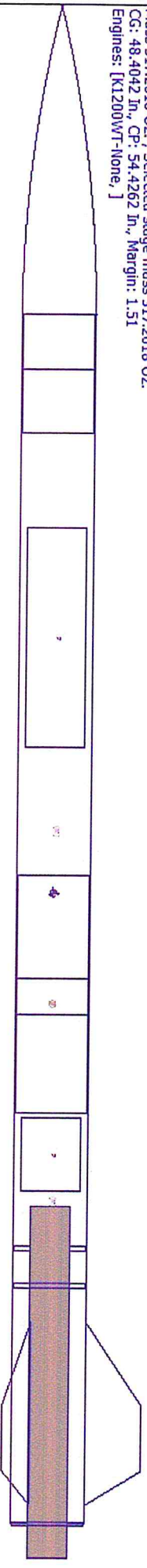
Budget and Project Plan:

- Additional fundraisers and grants.
 - Added launch dates
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Rocket design

- 4 inch diameter fiberglass body tube
- 28 inch back half
- 37.75 inch front half
- 22 inch nose cone
- 2 inch key switch ring

Bio Rocket
Length: 84.1733 In., Diameter: 3.9996 In., Span diameter: 9.9782 In.
Mass 317.2018 Oz., Selected stage mass 317.2018 Oz.
CG: 48.4042 In., CP: 54.4262 In., Margin: 1.51
Engines: [K1200WT-None,]





Rocket design Cont'd

- 2 pieces of shock cord
 - 10.25 inch long electronics bay made from coupler tube to fit our body tube
 - 6.75 inch long payload that is also made from couple tube to fit our body tube.
 - Payload is placed 2 inches into our nose cone
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Payload

- We will use 2, 2 liter bottle preforms on the payload
 - We will place the planaria in the preforms
 - We will have test flights with just water to see how the temperature of the water changes during our flights
 - Filled with expanding foam and drilled out to fit the preforms
 - Testing to see how the acceleration affects the planaria's rate of regrowth
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Flight tests

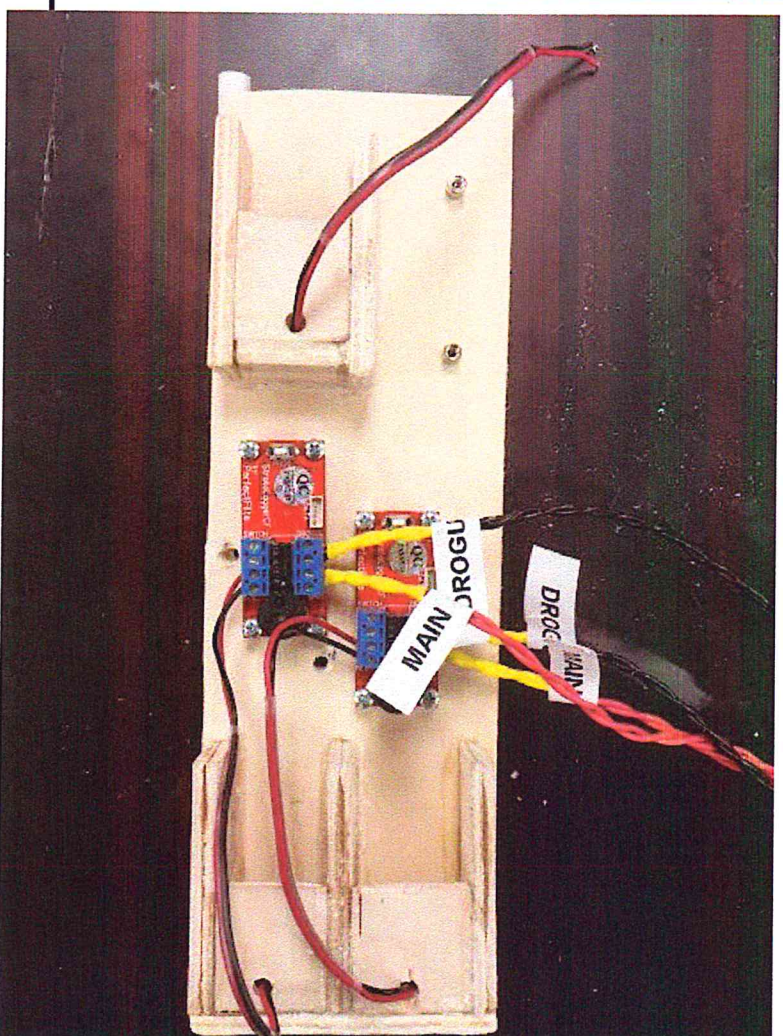
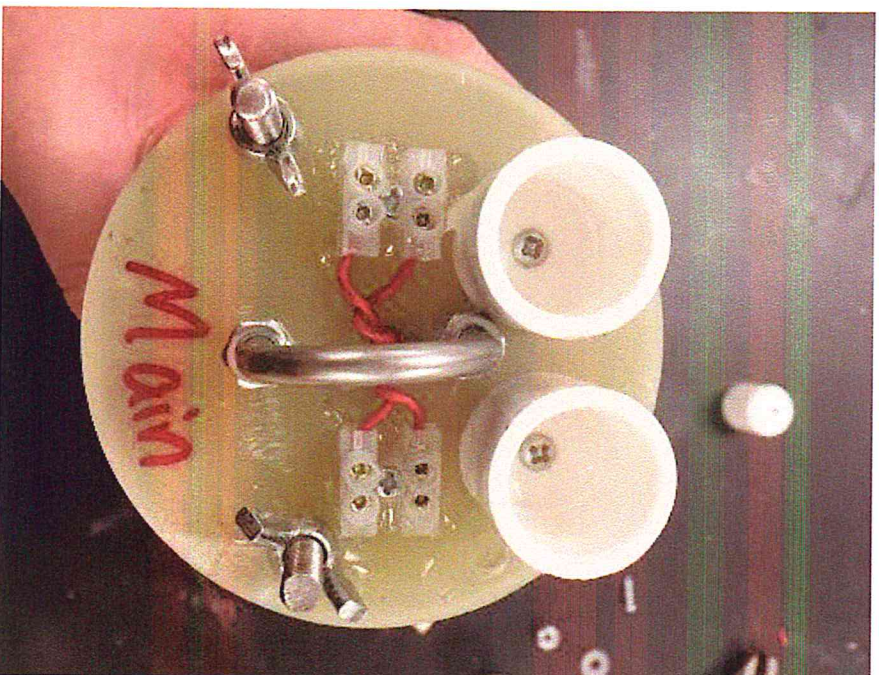
- Launching the weekend of Jan. 16-17
- More info can be provided
- Projected to be high be we project our masses to be a little low
- Actual mass should bring the down

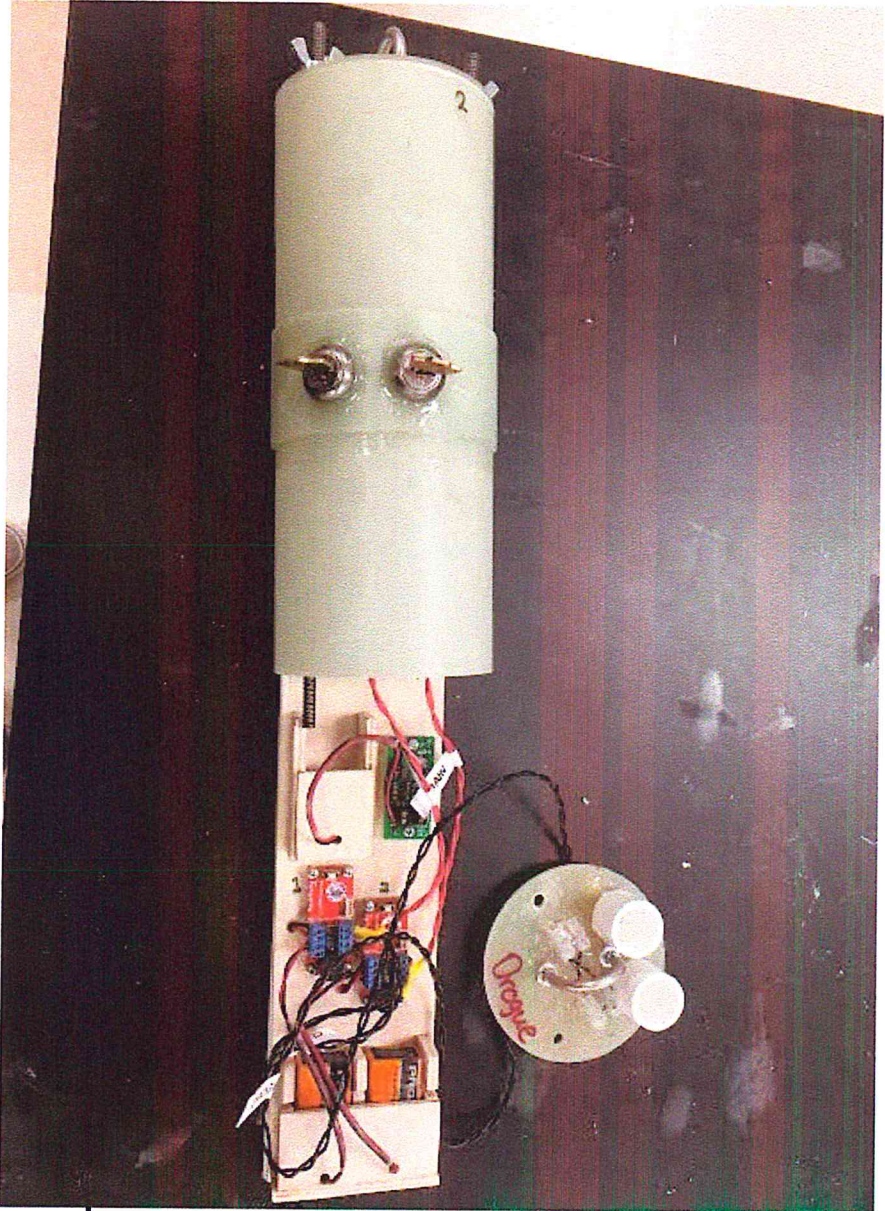
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86		[K1200WT-None]	5318.77	693.24	962.97	17.61	0.78	5318.76
87		[K1200WT-None]	5318.34	693.23	962.97	17.61	3.72	5318.33
88		[K1200WT-None]	5318.60	693.23	962.44	17.61	2.23	5318.61

Electronics Bay system

- 2 altimeters: 1 Main altimeter, 1 redundant altimeter
 - 1 accelerometer
 - 3 battery terminals for all electronics
 - 2 key switches on the same side of the electronics bay
 - switches control batteries for altimeters
 - accelerometer is on separate battery
 - altimeters control ejection charges at each end
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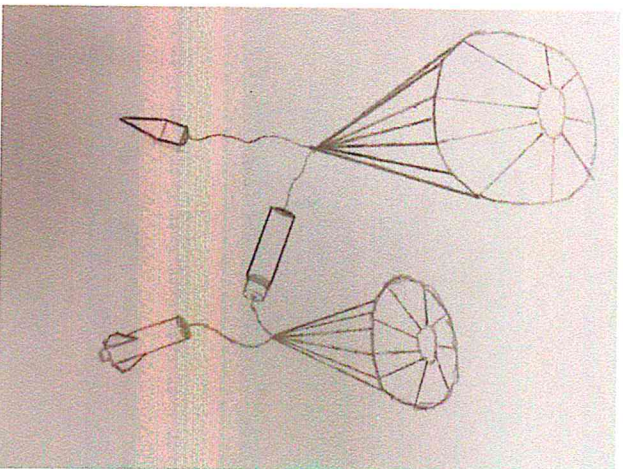
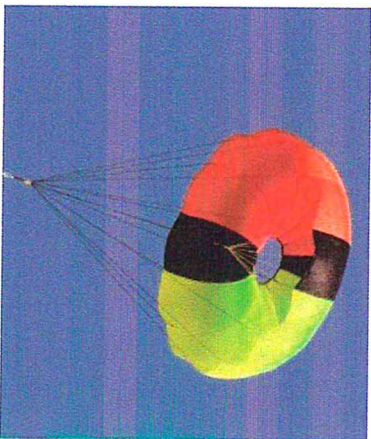
Electronics bay





Layout

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Recovery System Layout

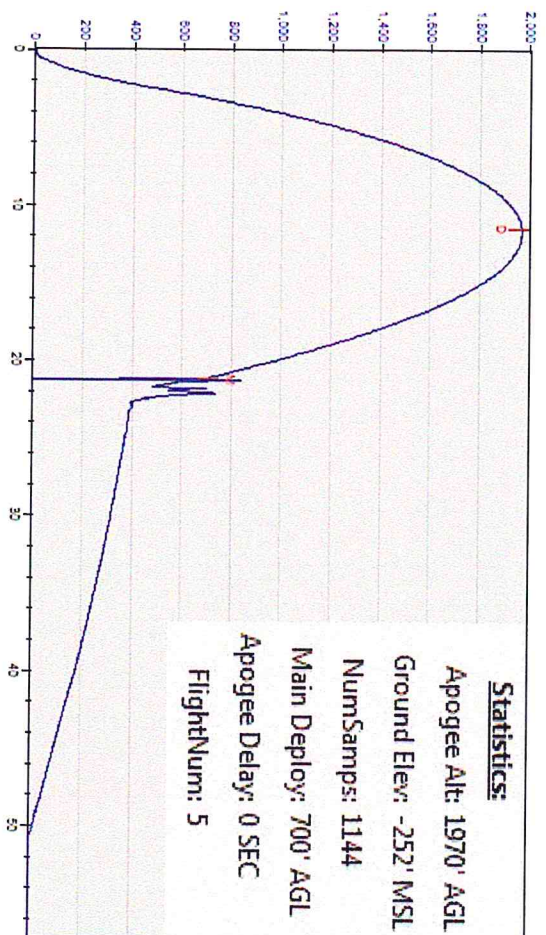
- 24. in Drogue chute in back half,
 - Attached to shock cord between rear bulkhead and E-bay
 - Deployed at apogee by ejection charge
 - 72 in. Main chute in front,
 - Attached to shock cord between E-bay and payload
 - deployed at 600 ft during descent
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Ejection Charges

- Main Altimeter fires both ejection charges for the drogue chute and main chute
- Redundant altimeter fires at 3 sec. delay on both charges to ensure separation
- Slows rate of descent to 16.5 ft/s

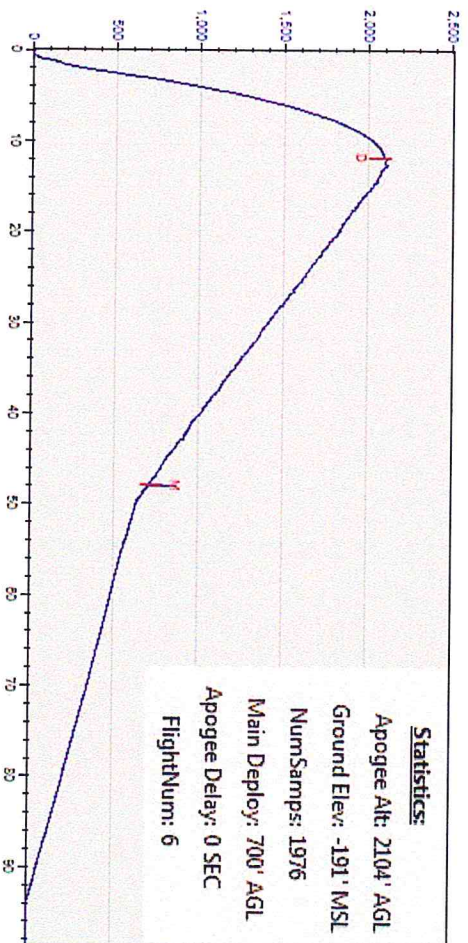


Sub Scale Flight Results



- First Launch
 - Unsuccessful
 - Rocket damaged
 - Altitude Reading

Sub Scale Flight Results cont.



- Second Launch
 - Successful
 - Design
 - Sealed E-bay



Budget Plan

The budget for Spring Grove's NASA Student Launch Initiative (SLI) includes costs for trips, launches, parts, food, fundraising supplies, and any other necessities to fully complete Team Darwin's project.

Final Budget: \$16463.48

Fundraisers

- Cotton Candy
 - Bonus Books (www.bonusbook.com)
 - Yankee Candle (www.yankeecandle.com)
 - Nuts About Granola (fundraising@nutsaboutgranola.com)
 - Paint Night
 - Rocket Real Estate
 - Rutter's Rewards
 - First Energy Grant
 - Donations
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Budget Cont'd

New ideas for fundraising are always welcome and several more opportunities for raising money are coming up. These events include:

Paint Night (March 24th)

Rutter's Rewards

The ending of Rocket Real Estate

Donations through GoFundMe and PayPal are monitored several times a week by our SLI group to update and keep on track with our budget. Any other money that SLI receives is updated on our budget; this helps to ensure that we reach our goal of traveling to Huntsville.

Project Plan

A GANTT Chart neatly expresses the important dates and time periods surrounding the due dates and progress of the following, which surround Team Darwin's Project.

The Project Plan displayed in our proposal displays the following:

- Fundraising
 - Launches
 - Deadlines for the proposals, PDR, CDR, and FRR
 - Teleconferences
 - Question and Answer Sessions
 - Weekly Meetings and Sessions
 - Including both construction and writing sessions
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GANTT chart schedule

Project Plan:

Team Darwin Timeline

