EagleSat-1 Project: Mission Synopsis

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Presentation Overview

- Mission Overview
- Satellite Structure
- Satellite Testing
- Integration and Launch
- Satellite Communications
- Failure Analysis
- Next Steps
- Future of EagleSat-1
Mission Overview

• Primary Objective: Educational
• Secondary Objectives:
  • Primary: Orbital decay
  • Secondary: Supercapacitors
Satellite Structure

Satellite Structure: GPS

- Novatel OEM615
Satellite Structure: Comms

- Taoglas Antenna Ceramic GPS Patch for RF
- Wood and Douglas Radio Module
Satellite Structure: Power

- Eaton HV1030-2R7106-R 10F (3V) Supercapacitors
- Provides 4F (15V)
Satellite Structure
Satellite Testing

• Day in the Life Test: software verification
• Random Vibration: launch vehicle
• Shock: launch vehicle
• Thermal Bakeout: outgassing
Integration and Launch

NASA (2017)
Communications
Ground Station

- Ham Radio Deluxe
- Rotator and Azimuth
- Pre-Amp
- TNC
- Power Supply
- Kenwood Radio
Failure Analysis: Silent Treatment

• Antenna not deployed
• Discharging before transmitting
  • Shorting near solar cells
  • GPS consuming
• Damaged solar cells
• Damaged critical components

United Launch Alliance (2018)
Next Steps

- Surrounding frequencies
- Old frequency
- Eclipsed and non-eclipsed passes

- Visual confirmation
- 4.5 meter dish
Future of EagleSat-1

- Estimated Life span: 1-2 years
- Orbit Life span: 7-9 years
- GPS data will analyze models for small satellites
Acknowledgements
Questions?

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“Success is not final, failure is not fatal: it is the courage to continue that counts.”
Winston Churchill
Citations


• United Launch Alliance (2017), Delta II JPSS-1 Mission Profile [Screenshot]. Retrieved March 23, 2018 from https://www.youtube.com/watch?v=tLkbDYZyf1c