

WV Rocketeers

Full Mission Simulation Review



WVU WVU-TECH
FSC SU MU WVWC
NASA IV&V



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5/19/15



RockSat-C 2015

FMSTR



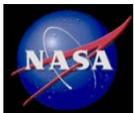
Presentation Outline

- Section 1: Mission Overview
- Section 2: Integrated Subsystem Testing Status
- Section 3: Full Mission Simulation Results
- Section 4: Project Management Update



1.0 Mission Overview

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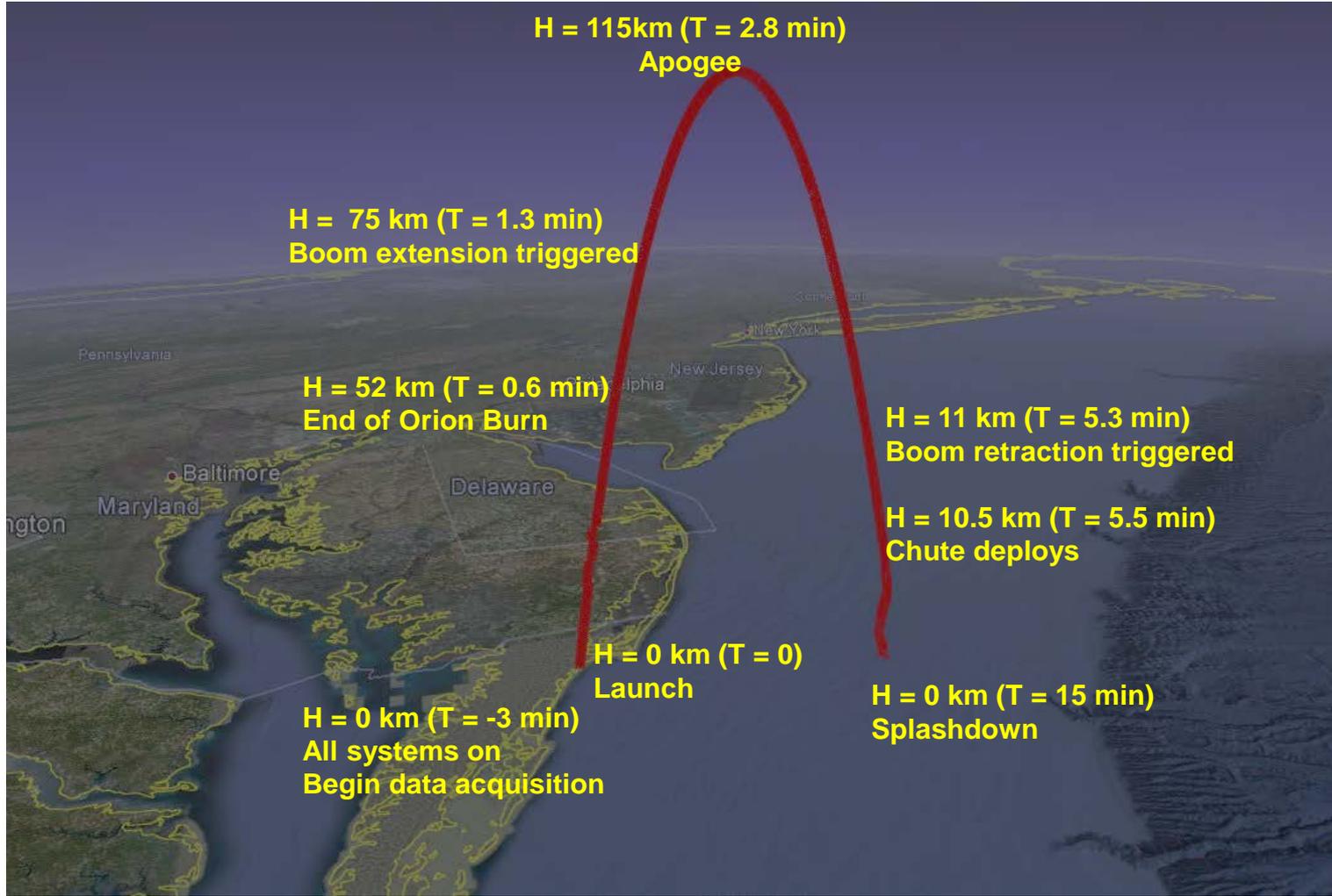


Mission Overview

- Capture NIR Earth images from space, measure magnetic field of Earth, compare redundant flight dynamics data, & detect ionized particles
 - Need access to optics port
- Benefits SmallSat community – COTS orientation estimation



Concept of Operations



2.0 Integrated Subsystem Testing Status

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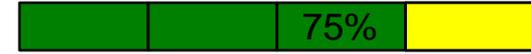
Integrated Subsystem Testing Status:

- HAB flight test – 5/23 (integration in progress)
 - SPACE-4X operation and data analysis
 - WVU-CAM operation and data analysis (no boom)
 - PDS voltage regulators and activation switch
- Mechanical integration and fit check – 5/26
 - SSP verification
 - WVU-CAM boom operation
- ATK vibration test – 6/1
 - SSP performance validation
 - Full mission simulation



Integrated Subsystem Testing Status:

1.0 HAB Flight Test



This will verify that all systems (except WVU-CAM Boom) are functioning properly in flight conditions over extended operations

Test will be performed on 5/23

Payload integration started on 5/15 and will conclude on 5/22



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Integrated Subsystem Testing Status:

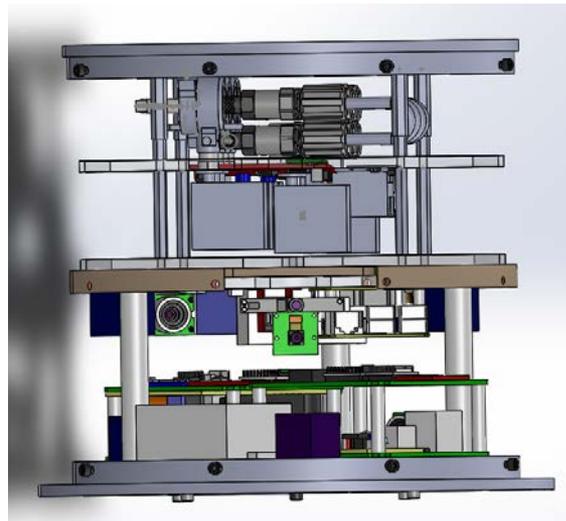
1.0 Mechanical integration and fit check



This will provide verification that all subsystems fit with volume constraints and are support/positioned properly

Test will be performed on 5/26

Additional tests on WVU-CAM Boom will be performed to verify operational limits are satisfied



Integrated Subsystem Testing Status:

1.0 ATK vibration test



This will verify that the SSP subsystem adequately supports all other subsystems and that all electronics are operations through/after testing

Test will be performed on 6/1

Additional tests will be conducted at Wallops Island on 6/21

Include pictures and/or
screen shots of data or
test

USE this slide for each
integrated subsystem



3.0 Full Mission Simulation Results

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Full Mission Simulation Results

- Give overview of test
 - Who, what, where, when, how long, how many times (if you've had multiple mission sims accounting for previously discovered issues, please discuss in the upcoming slides)
 - Explain if anything wasn't in flight configuration (not fully integrated in canister, some PCB missing, etc) and **WHY**
 - Show pictures of your test setup
 - Discuss plans for follow up testing



Full Mission Simulation Results

- What action items do you have left between now and LRR?
 - ATK vibration test
 - Action items in preparation are summarized in project summary



4.0 Project Management Update

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Action Item Summary

- WVU-CAM 3D printed parts 5/19-5/22
- HAB payload integration 5/22
- WVU-CAM full integration 5/25
- SPACE-4X full integration 5/26



User Guide Compliance

Requirement	Status/Reason (if needed)
Center of gravity in 1" mid-can?	With 1'
Contained in can	
Connected to can by 4/5 bulkheads on top and bottom only	
Mass at 10 ± 0.2 lbs (half can)	Currently 10 lbs with ballast for 0.2lb tolerance
Shared canister clearance	1" separation between payloads – needs verified
No voltage on the can	No opportunity to check yet
Activation wires at least 4 ft	
Activation wire at least 24 gauge	22 gauge
Early Activation: current < 1 A	No opportunity to check fully integrated current draw yet
T-0 Activation: current < .1 A	Not using
Battery Type	Ni-mh (will not charge at Wallops)



Biggest Worries

- WVUTech-SPACE software woes
 - May have to off-ramp SPI comm (IMU)
- WVU-CAM software analysis
 - Not much effort put into data analysis yet
- HAB launch recovery
 - Risky business if payload is non-recoverable



Conclusions

- Somewhat behind schedule but have plan in place to mitigate risk if worse-case scenarios occur
- Non-US citizen attending launch
- Discuss Check-In Procedure – you don't have to put anything here, this is just an FYI that we will be talking about this (I will be quizzing you on it so be familiar!)
- Discuss Presentation to RockOn! 2015
- Discuss Final Report
- Discuss extra launch attendees

