NPS CubeSat Launcher (NPSCuL)
Program Update

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What is “coach class” on a rocket?
What is “coach class” on a rocket?

The “airliners” of the US unmanned space program.

DELTA

ATLAS
What is “coach class” on a rocket?

Seating Arrangement

First Class

Business Class
What is “coach class” on a rocket?

The under-served customer

And

The “limited leg-room” seat
What is “coach class” on a rocket?

Seating Arrangement

First Class

Business Class

Coach Class?
P-PODs packaged as a secondary payload.

- high capacity (24U-50U)
- leverages mature technology
- multi-LV compatible
- low risk to primary payload or other secondary payloads
NPSCuL Design

NPSCuL (10 5U P-PODS) (ESPA-Compatible)

NPSCuL-Lite (8 3U P-PODS) (Compatible with ESPA and other, smaller Secondary Payload Adapters)
Integration Process

DoD / Government/University CubeSat Experiments

Space Test Program (or other launch provider)

Launch!

Integrated P-PODs

P-PODS integrated into NPSCuL structure

Finished NPSCuL delivered to Space Vehicle Integration Site

CubeSats integrated into P-PODS

Finished P-PODs delivered to NPSCuL Integration Site

Space Vehicle Integration and flight preparation
Structure Qualification
– Launch environments +6dB using Mass Models to simulate loaded P-PODs
– Must accommodate minimum expected CubeSat mass (1 kg/U)
– NPS will perform all structural tests

Functional Developmental Testing
– On-board electronics fire the deployment systems in sequence
– Currently in development by a launch provider
– NPS to develop mission specific electrical harnesses
Sequencer Design

Requirements:
- 28V power from LV
- RS-422 programming interface
- 8-channel redundant output
Program Progress To Date

NPSCuL-Lite
- Qualification Test structure produced and assembled.
- Mass model of sequencer unit has been integrated
- Structural and TVAC testing to begin shortly.

P-POD Mass Models
- 9 units produced
- design went through a thorough qualification test battery

Sequencer – development by industry is underway.
Program Progress To Date

P-POD Mass Model Structural Test at NPS Vibration Test Facility, Monterey, CA
Future of NPSCuL/NPSCuL-Lite

Potential flight opportunity exists in 2010. To support this opportunity:

– Flight Article Build – through DEC 2009
– Harness Design and Build – through JAN 2010
– Acceptance Test – no later than March 2010
  • Requires sequencer and 8 integrated, flight-ready P-PODs
– Launch Vehicle Integration – April 2010
– 1st Launch – August 2010

2nd Flight Opportunity

– Possible slot on an ESPA ring expected in 2012
– NPS will seek to fill any unfilled slots with payloads from University developers
Questions?

NPSCuL
Coach Class to Orbit
NPSCuL Contacts

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