CalPoly 2010 CubeSat Workshop

Project ELaNa and NASA's CubeSat Initiative

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During the 2006 Small Satellite Conference, the following statement was stated:

"There are no funds available for Small Payloads from NASA"

Was this really true?

Maybe then, but times have changed

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- In 2007, LSP Management gave direction to go forward and investigate how NASA can fly the Poly Picosatellite Orbital Developer (PPOD) system on Expendable Launch Vehicles (ELVs)
- Over the next three years the LSP PPOD team has worked to identify launch vehicles where PPODs could be integrated
  - The biggest thing was that FUNDING, was provided to pursue the integration of a PPOD
- So were we successful in securing PPOD/CubeSat launches?

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After many beatings and healing of scars,

I can say… *YES!*

On January 6, 2010, the NASA Flight Planning Board (FPB) approved the manifesting of the first educational PPOD mission containing three University CubeSat

This PPOD Mission is called ***ELaNa***

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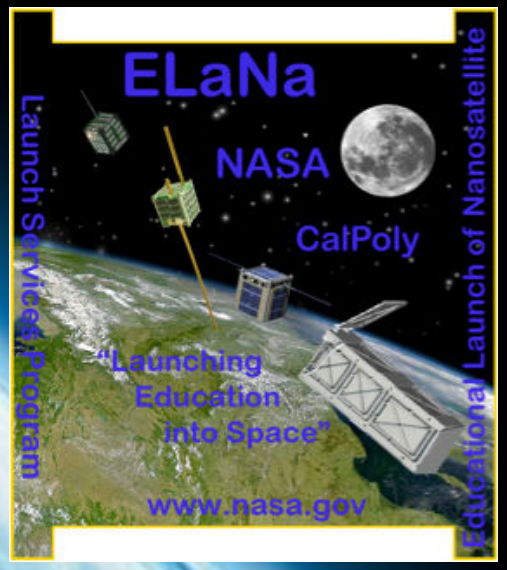
ELaNa - Education Launch of Nanosatellite

Mission Statement

"Launching Education into Space"

First ELaNa Mission
- *Montana State University*
- *University of Colorado, Boulder*
- *Kentucky Space*

Backup – ?



Launch Date: November 22, 2010 on a Taurus XL carrying the Science Mission Directorate (SMD) Glory Spacecraft

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LAUNCH SERVICES PROGRAM

Path to the Flight Planning Board

Jan 10 ~ FPB Manifest ELa

Aug 09 ~ SMD Briefing

Oct 09 ~ O' Conne
OSMA Briefing

July 09 ~ PRCB approval of
LSP Requirements Document

April 09 ~ LSP PRCB Approval
of CoFR Process

July 09 ~ Grestenmaier Briefing
AA SOMD

whole lot of meetings
and beatings

Jun 08 ~ CalPoly on Contract
for First PPOD

Mar 07 ~ First Briefing
to HQ on PPODs

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Now that we have our first educational PPOD manifested, what's next?

The ELaNa mission has been transformed into Project ELaNa

Currently the LSP PPOD team is working the recurring Engineering on Delta II for a possible three PPOD mission in Sept 2011

Studies are under way for an eight PPOD mission in December 2012

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Now that we have our first educational PPOD manifested, what's next? (cont.)

Work is under way for the potential additional PPOD mission in late 2011 and early 2012 time periods

With these possible opportunities, how will NASA determine and select CubeSat for these missions?

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LAUNCH SERVICES PROGRAM

Announcement of CubeSat Launch Initiative

February 23, 2010

The National Aeronautics and Space Administration (NASA) Space Operations Mission Directorate (SOMD) anticipates that launch opportunities for a limited number of CubeSats may be available on launches currently planned for 2011 and 2012. These launch opportunities would constitute a pilot project intended to demonstrate viable launch opportunities for CubeSat payloads as auxiliary payloads on planned missions.

Response Date: April 15, 2010

Selection Notification: Selection is anticipated by June 30, 2010

I hope that every CubeSat project submitted!

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So, What does this mean to the CubeSat community?

NASA is working to provide a sustainable Educational CubeSat flight project with a sustainable flight rate

Once all the proposals are reviewed, this will tell NASA of the CubeSat demand needing launch opportunities

Knowing the demand will tell NASA which direction to pursue in securing PPOD flights

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What are the current estimates for possible flight opportunities for PPODs to maintain sustainability?

	FY11	FY12	FY13	FY14
# of PPODs	1 to 4	9	8 - 10	8 - 10

My question to the community is:
If NASA secures these opportunities, will there be CubeSats there to fly?

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Requirements

LSP-REQ- 317.01 Rev Basic

Launch Services Program Level Poly Picosatellite Orbital Deployer (PPOD) and CubeSat Requirements Document

If you want to fly on a NASA ELV, then you will need to meet the requirements in this document

At this point in time there are no waivers for these requirements – We can make changes but they will need to go to NASA Engineering Review Board (ERB)

There will be a splinter meeting to discuss these requirements and what they mean on the last day of the workshop

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PPOD/CubeSat Challenges

Convincing the Mission Directories and Primary Mission that the PPOD/CubeSat have been well analyzed/tested and the mission risk is at baseline

CubeSat being ready and on time to fly on the day of launch

Understanding of what is required from the CubeSat in the verification of Interface Control Document (ICD) requirements

Knowing that they are the auxiliaries and not a primary

Funding, there are costs associated with integrating a PPOD/CubeSat mission on to the launch vehicle and for Educational CubeSat the cost is $30K

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- *January 26, 2010* ~ NASA Press Release for the First ELaNa Mission
- *February 23, 2010* ~ NASA Releases the CubeSat Initiative requesting proposals
- *February 26, 2010* ~ NASA Watch story on CubeSats
  - *"NASA Still Can't Get That Metric Stuff Right"*
    - » *Otherwise: this is a very cool program.*
- *March 17, 2010* ~ Space News Article on NASA's CubeSat
  - *"With Upcoming Mission, CubeSats Poised for Takeoff at NASA"*

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Currently there is support and momentum at NASA HQ for Educational PPOD and CubeSat missions

We need to keep it moving in the right direction,

On Orbit!

Questions?