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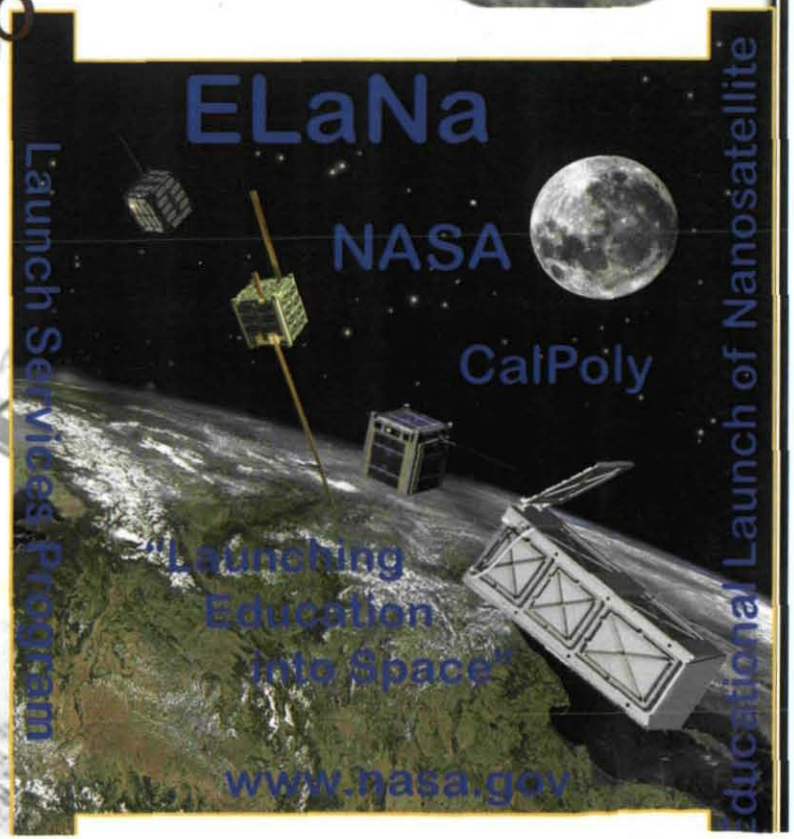
LAUNCH SERVICES PROGRAM

Project ELaNa and NASA's CubeSat Initiative

CalPoly 2010 Summer CubeSat Workshop Small Satellite Conference Utah State University



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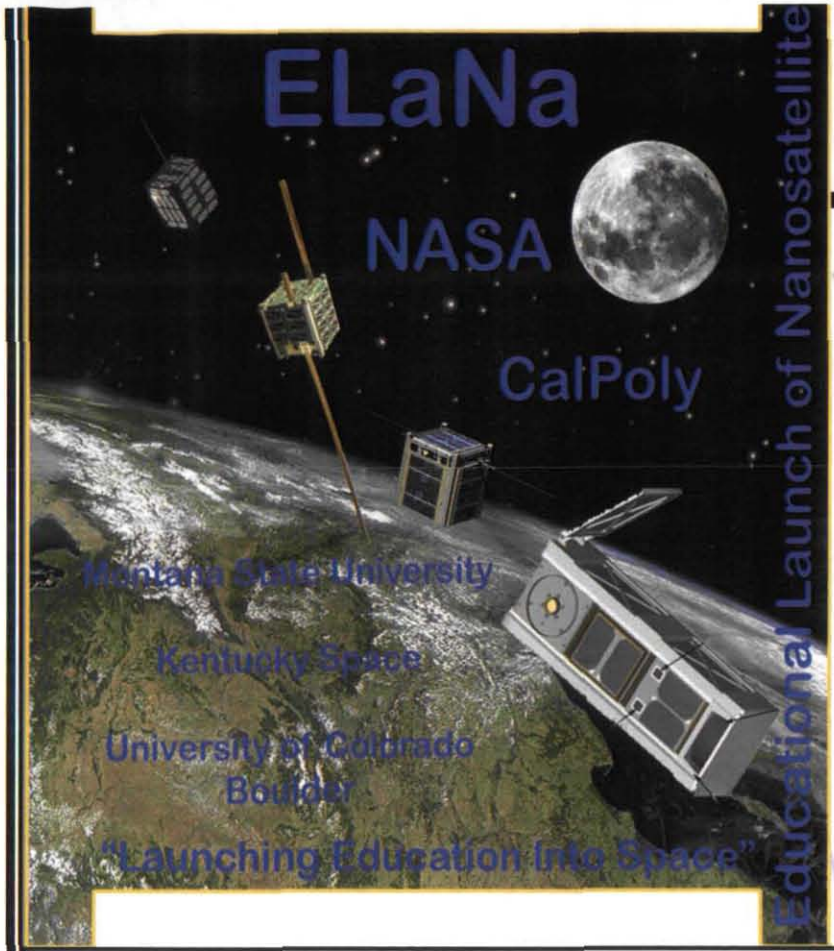

Launch Services Program Involvement

ELaNa – Education Launch of Nanosatellite

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"Launching Education into Space"

An effort to return educational spaceflight to NASA

Currently planning to fly on ELV some time in 2010 (once we get HQ approval)

Developing the capability to fly P-Pods on LSP procured Launch Vehicles

What is the importance of PPOD/CubeSats?

-To bring back an Educational element to space flight - University Payload Program

- Can help in meeting NASA Goal and Vision of going to the Moon and Mars

- Increase Payload Capability for our customers

-Training future engineers and scientist to enter into the aerospace field

Who is ELaNa?

The first ELaNa mission is comprised of three University CubeSats to demonstrate various technology

Montana State University

Kentucky Space

University of Colorado – Boulder

Educational Developments

LSP Future Developments

Start a University Payload Project that will allow universities to build a CubeSat type payload to provide information that will aid or verify NASA Projects designs while providing higher education research

Last summer's FPO Intern student started the ground work for the first LSP CubeSat Development Payload

- This will be a 2U CubeSat that will measure launch vehicle environments at the CubeSat location
- There will be a call for proposals put out to the university community from which three will be selected to proceed to PDR - 2 year program

Education 9th to 12th

CubeSat projects can be developed in the high schools environment by using CubeSat development kits.

Currently Thomas Jefferson High School has an active CubeSat Project and is now preparing for a flight

These kits can be used to promote Science, Technology, Engineering and Mathematics while preparing students for college programs

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Summer CubeSat Workshop

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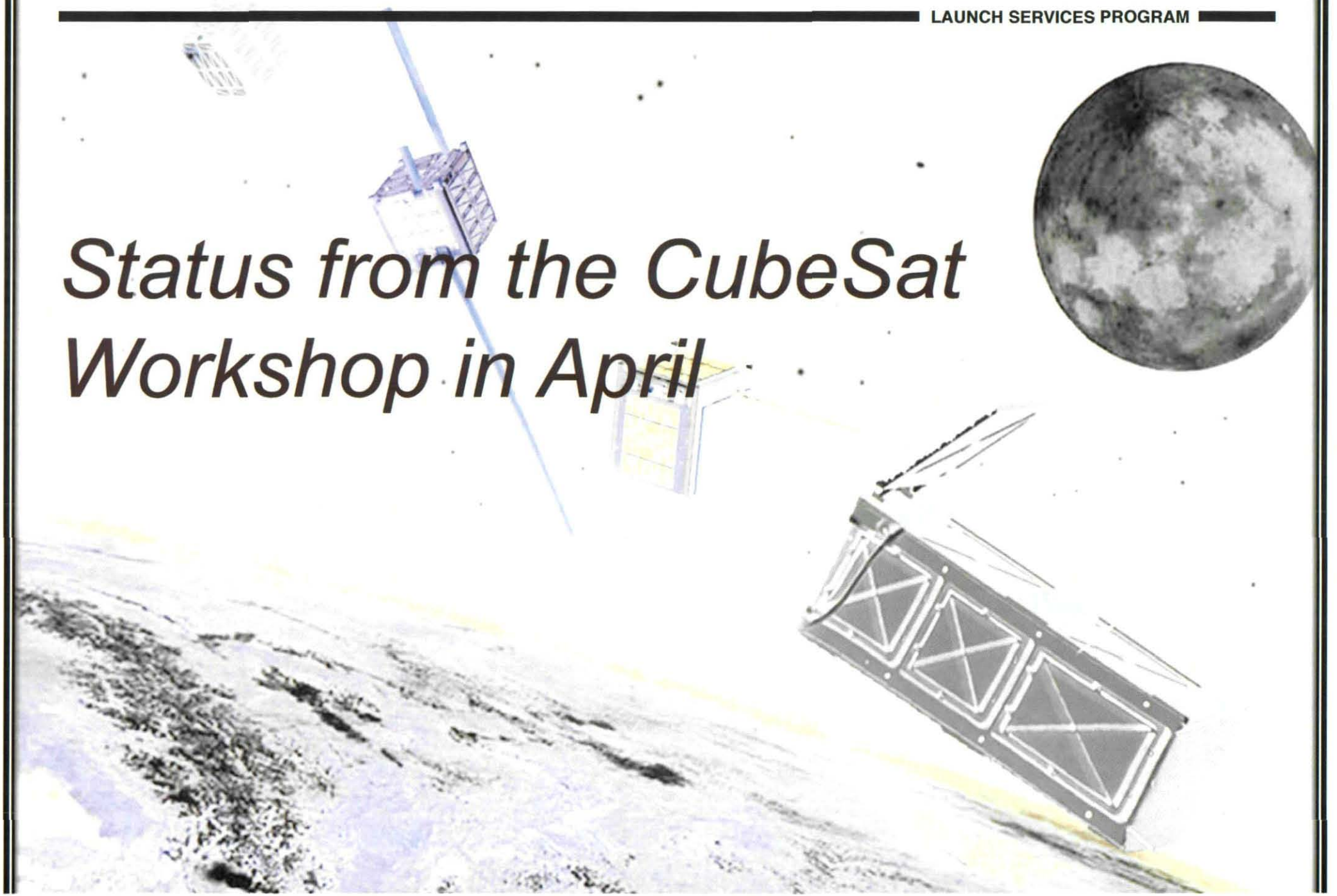

Status from the CubeSat Workshop in April

Summer CubeSat Workshop

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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!

Summer CubeSat Workshop

So what was the out come of the Announcement?

16 - Proposals were received

One proposal was removed due to not having a NASA relationship

Three proposal were removed due to not meeting the requirements of the proposal

12 Proposal (CubeSat mission) were selected and are now being manifested on ELVs

Current Mission

ELaNa – Educational Launch of Nanosatellite

Glory Mission – November 22, 2010
1 P-POD - Taurus XL
1U Montana State Unv – Prime F1
1U Kentucky Space – KYSat
1U Unv of Colorado – HERMES

Falcon 1e Enabler Mission – 2011
2 CubeSats
Unv of Florida - SwampSat
CalPoly – CP5

NPP Mission – October 2011
3 P-Pods – Delta II
2U Unv of Michigan – COVE/McCabe
1U Montana State Unv – Prime F2
3U Unv of Michigan – RAX
3U Utah St Unv, - DICE
Back Up
3U Unv of California – CINEMA

Current Missions

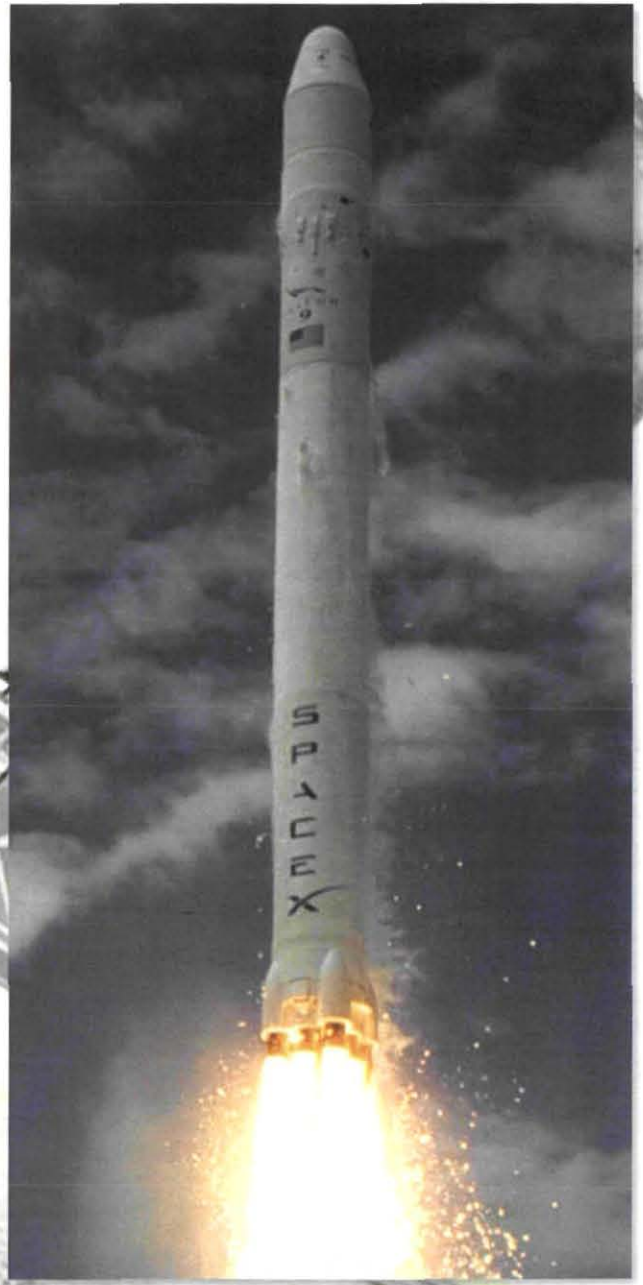
ELaNa – Educational Launch of Nanosatellite

CRS#2 – October, 2011
4 P-POD – Falcon 9
Manifest is in work and CubeSats will come from the CubeSats initiative announcement

CRS#3 – NET March, 2012
5 P-POD – Falcon 9
Manifest is in work and CubeSats will come from the CubeSats initiative announcement

So how does a CubeSat increase their chances to get on orbit? –
Design to the minimum orbital requirement of the CRS missions 325km @ 51 degrees inclination

Future CRS Mission may have the ability to go to higher orbit



Manifesting

CubeSat Launch Initiative

- CubeSat Missions
- *
- *
- *
- CubeSat Missions

NASA CubeSat Missions

- CubeSat Missions
- *
- *
- *
- CubeSat Missions

Selection Representatives

- SOMD
- OCT
- ESMD
- ISS
- SMD
- Education
- IPP
- DoD

CubeSat Missions Selection List
CubeSat 1
CubeSat 2
CubeSat 3
*
*
*
CubeSat N

Launch Services Program perform manifesting and management of CubeSats integration on ELVs

Summer CubeSat Workshop

LAUNCH SERVICES PROGRAM

Announcement of CubeSat Launch Initiative

July 30, 2010

The newly release announcement is very similar to the first release however there are some changes

- Proposal development from 45 to 107 days

- The previous announcement required development efforts to be conducted under existing NASA-supported activities. This announcement relieves this requirement and will judge otherwise qualified submissions solely against the selection criteria.

Response Date: November15, 2010

Selection Notification: Selection is anticipated by January 30, 2011

I hope that every CubeSat project submits!

Flight Rate

What are the current estimates for possible flight opportunities for P-PODs to maintain sustainability?

	FY11	FY12	FY13	FY14
# of PPODs	1	12	8 - 10	8 - 10

My question to the community is:

If NASA secures these opportunities, will there be CubeSats there to fly?

Future Mission

NASA – Launch Services Program continues to perform studies on developing capabilities to integrate both P-PODs and Small Deployables on ELVs

These studies are focusing on a common interface for small deployables between ELVs currently on contract

With common interfaces should come standards for small deployable mission
- 3U P-POD
- 6U Deployer,
- 8 inch interface
- 15 inch interface

In Summary

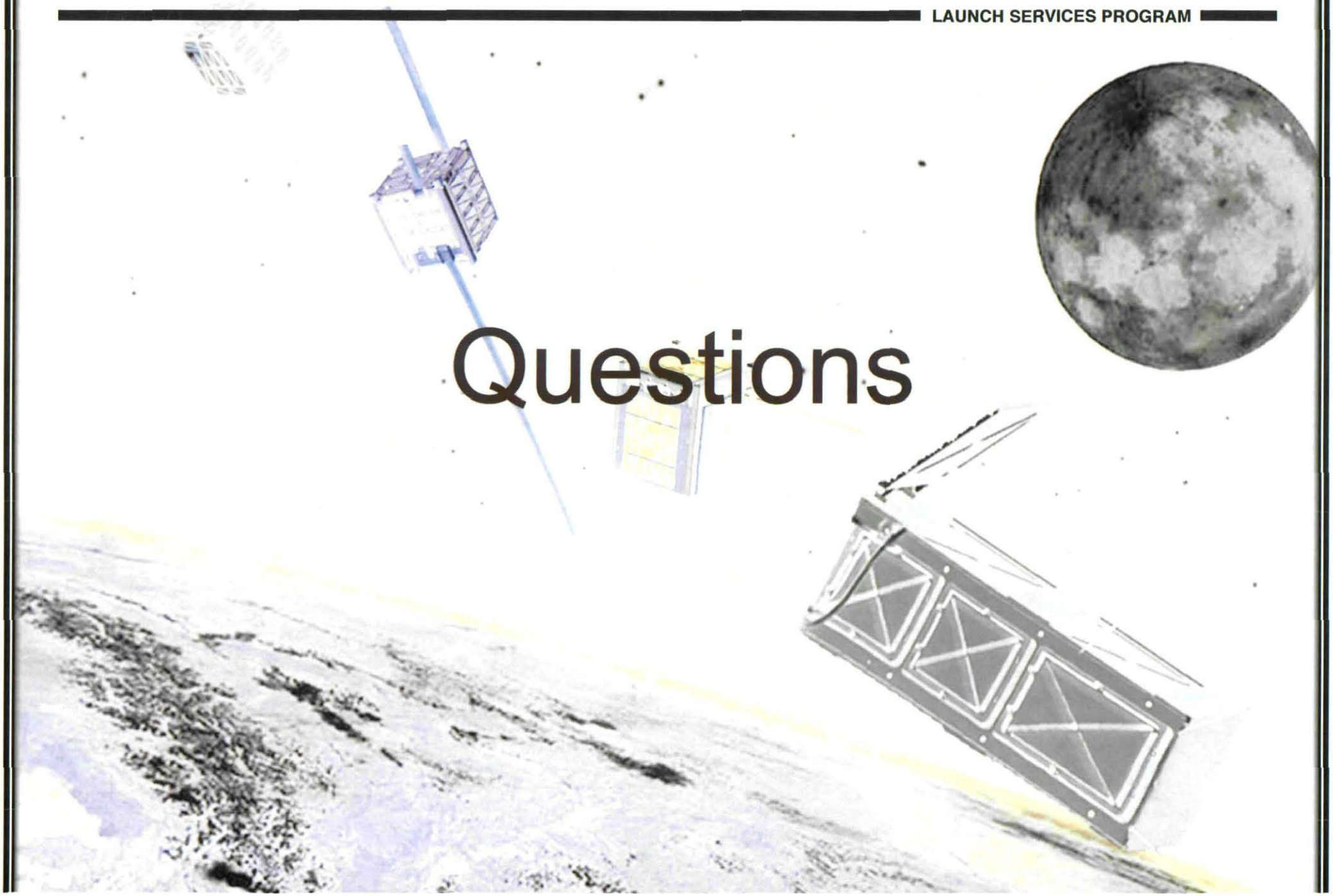
ELaNa – Educational Launch of Nanosatellite
" Launch Education into Space"

Two Announcements of CubeSat Launch Initiative targeting CubeSat to be launched on NASA ELVs

Two launches have been manifested and there are two additional launches in the manifesting process

Developing flight opportunities for P-PODs to maintain sustainability for CubeSats

CubeSats need to be there to maintain flight opportunities



Questions