NLAS Objectives & Relevance

Objectives:

• Increase the access to space by having the capability to deploy 8x 3U, 4x 6U or a combination of 1U, 1.5U, 2U, 3U & 6U nano-satellites
• Provides a modular platform with a configurable sequence and schedule for deploying multiple secondary nano-satellite payloads from launch vehicles

Relevance/Impact:

• Partnership with Operationally Responsive Space (ORS) Office
• NLAS provides a user configurable modular deployment system that reduces launch vehicle integration times for secondary payloads
• NLAS provides the manifest and access to space capabilities for a variety of secondary nano-satellites ranging that are able to perform space science, including Astrophysics, Exobiology, Heliophysics, Earth Science and possibly even Planetary Science.
• NLAS also enables the flight demonstration of new technologies in the space environment by providing a greater number of opportunities for access to space and hosting of these technologies on nano-satellite platforms.
• US Government has technology transferred the designs to assist and accelerate the small/cubesat industry
• Industry has adopted and extended these designs with next generation Adapters and Dispensers available from Commercial vendors
**NLAS Overview**

NanoSatellite Launch Adapter System includes:

- 1x NLAS Sequencer
- 1x NLAS Sequencer Test Box (GSE)
- 4x NLAS Dispensers
- 1x NLAS Adapter
- Miscellaneous cables

Adapter: ~102 cm / 40 inches in Diameter
System mass: ~ 95 kg / 210 lbs (excluding payloads)
Payload capacity: 24U up to 56 kg / 123.4 lbs
NLAS Elements During I&T

- NLAS Adapter
- NLAS Sequencer
- NLAS Dispenser
Example of 2x NLAS In A Launch Vehicle Stack

- Primary Spacecraft
- NLAS Adapter
- NLAS Dispenser
- NLAS Sequencer
- LV Adapter
- PPOD
- NLAS
- NLAS w/ PPODs
NLAS Sequencer

Successively flown on 19 November 2013!

- Size: ~10 x 8 x 3.7 inches
- Mass: ~1.9 kg / 4.2 lbs
- Fully programmable time sequence for all outputs from 1 second to 6 hours
- Single input signal from launch vehicle
- 8x Output signals for PPOD or NLAS Dispensers actuator
- 1x Auxiliary output for additional device or “Daisy Chaining” of Sequencers
- Internally powered (~2 month standby power, 6 hour+ operational power)
- LED status indicators
- Redundant controller boards
- Redundant output pulses
- Hardware and software noise rejection for LV input signal
- Remove & connect before flight inhibits
- Patent pending, licensing available
NLAS Dispenser

Successfully flown on 19 November 2013!

- Size: ~10.5 x 18.3 x 5.6 inches
- Mass: ~6.3 kg 3U / 5.4 kg 6U
- Spring energized deployer
- Reconfigurable design support either two 3U bays or a single 6U bay
- Payload mass: 2x 6kg (3U) / 14.0 kg (6U)
- Ejection velocity: ~1.5m/s for 6.0kg 3U payload
- Resettable TiNi actuators with redundant triggers
- Multiple mounting orientations
- Designed to operates at -18°C to +50°C (0°F to +122°F)
- Shocked and Random Vib’d to GEVS
- Design release package coming soon
NLAS Adapter

- Size: ~40 inches diameter x 10 inches
- Mass: ~63.3 kg / 139.6 lbs
- Interfaces to LV uppers stage and primary spacecraft
- Standard LV mating interfaces:
  - 38.81 inch diameter bolt circle
  - 15 inch diameter bolt circle
- Accommodates diameter of 24U of deployers:
  - 4x NLAS Dispensers,
  - 8x CalPoly PPODs,
  - Or a combination of both
- Mounting locations for NLAS Sequencers and miscellaneous cables
- Auxiliary mounting locations on Isogrid
- Stackable for multiple systems in a single launch

Manifested for launch in CY2015