Update on Progress of SSIKLOPS (Space Station Integrated Kinetic Launcher for Orbital Payload Systems) - Cyclops

AIAA Small Satellite Conference
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VISION
• Access to space for satellites in the 50-100kg class is a challenge for the small satellite community.
• Rideshare opportunities are limited and costly, and the satellite must adhere to the primary payload’s schedule / launch needs.
• Launching as an auxiliary payload on an Expendable Launch Vehicle presents many technical, envir., and logistical challenges.
• Cyclops provides small satellites the infrastructure to be deployed from the ISS into orbit with minimal technical, envir., logistical, and cost challenges.
Cyclops interfaces with the JEM Airlock Slide Table, the ISS Robotic Arms, and the deployable satellites.

Will deploy satellites up to 100 kg in size contingent upon satellites meeting all ISS safety requirements.
The interface between Cyclops and its deployable satellite is called the Experiment Attachment Fixture (EAF).

The EAF attaches to the bottom of the satellite and interfaces with the Cyclops’ grapple system.
SATELLITE INTERFACE (2/3)

SpinSat in Cyclops Envelope
SATELLITE INTERFACE (3/3)

LoneStar in Cyclops Envelope
Cyclops and its deployable satellites will be launched onboard one of NASA’s ISS resupply vehicles in a controlled pressurized, soft stowed environment.

Cyclops and its deployable satellites will be stowed onboard the ISS.

Cyclops with its deployable satellite will be processed through the ISS JEM Airlock and transferred to the deploy position by one of the ISS robotic arms.

Cyclops will deploy its deployable satellite with assistance from one of the ISS robotic arms.

Cyclops will be returned inside the ISS for future use.
CONCEPT OF OPERATIONS (2/2)
CREATION
DESIGNED/ANALYZED (1/2)
DESIGNED/ANALYZED (2/2)
FABRICATED
UTILIZATION
LAUNCH

SpaceX 4
9/12/2014!
• SpinSat (55.9 cm dia; 52kg): Naval Research Laboratory electronically-controlled Solid Propellant thruster, atmospheric neutral density experiment.
SPINSAT DEPLOYMENT (2/2)

Oct 2014!
LONESTAR DEPLOYMENT (1/2)

- LONESTAR-2 (64 cm x 64 cm, 31 cm; 50kg): joint NASA, Texas A&M Univ., and Univ. of Texas at Austin autonomous rendezvous and docking experiment.
LONESTAR DEPLOYMENT (2/2)

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