Smallsats @ GSFC
Center Update for HQ PI Forum

3-25-21
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Code 850
SmallSats @ Goddard

NASA Science Mission Directorate
Heliophysics and Astrophysics Portfolio Management

> 25 Missions

SmallSat Activities Management

Missions
5 CubeSats 1 ISS Payload 4 ESPA-Class (formulation)

Technology Developments

Strategic Partnerships
Goddard CubeSat Missions

- **petitSat**
  - Current Status: I&T
  - Launch: ISS December 2021

- **SNOOPI**
  - Current Status: I&T
  - Launch: ISS December 2021

- **GTOSat**
  - Current Status: I&T
  - Launch: GTO TBD 2022

- **BurstCube**
  - Current Status: I&T
  - Launch: ISS December 2022

- **Dione**
  - Current Status: Development
  - Launch: Polar TBD 2023

- **LEO and Beyond**
  - LEO FlatSats
Landsat 9 ESPA Flight System (L9EFS)

- L9EFS is a separate “spacecraft” managed by Goddard and funded by the US Space Force Multi-Manifest Office (MMO).
- Spacecraft will ride under Landsat 9, stacked on an ATLAS V and is schedule to be launched in 2021.
- WFF is supporting the project as an integrator of the ESPA ring and associated port assemblies with multiple dispenser configurations, working in partnership with Parsons, the USSF MMO integrator
- **Status:** Integration underway at WFF; vibe testing on two port assemblies planned for April
WFF UHF Ground Station

• WFF UHF Ground Station, after being down since October 8, 2020 is now operational again as of this week!
• Recovery from major mechanical failures in the drive systems of a 60+ year old system were hampered by lack of parts (requiring manufacture) and weather restrictions
Launch Capabilities at the WFF Campus

- Antares continues ISS resupply (NG-16 July 2021)
- Rocket Lab @ WFF!
  - Enabling small launch capability via Electron
  - Neutron vehicle will offer significant Rideshare and Constellation capability
- NAFTU (NASA Autonomous Flight Termination Unit) certification is a top priority at WFF
Other Activities

Formulating New Missions
• GSFC is actively formulating and proposing new missions at the ESPA-class scale as well as initial Constellation missions
• GSFC is working aggressively to pursue partnerships with industry
• In parallel GSFC continues to offer unique Smallsat spacecraft solutions for unique and challenging mission applications

Smallsat Seminar Series
• Kudos to our GSFC Smallsat Chief Engineer Luis Santos!
• 19 Seminars to date
• SmallSat industry products and services focused mostly on industry bus solutions
• Contact Luis.H.Santos@nasa.gov to present (industry) or receive invitations to attend (anyone with NASA access)

WFF Mission Planning Lab
• Busy schedule supporting Pioneers missions and multiple Smallsat mission design studies
• Collaborating with GSFC Mission Design Lab

Technology Investments
• Significant progress on the development of the Modular Architecture for Resilient Extensible Smallsats (MARES)
  • Beyond-LEO technology
  • Currently being used for GTOSat
• Continue to develop software applications for broad community use: cFS, NOS3, OSK