



Jet Propulsion Laboratory
California Institute of Technology

Lunar Flashlight Mission Update

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Lunar Flashlight

To detect surface ice deposits in south pole lunar cold traps

Measurement Approach:

- *Lasers in 4 different bands illuminate the lunar surface permanently shadowed craters.*
- *Light reflected off the lunar surface enters the reflectometer to distinguish water ice from regolith.*

Teaming:

- *JPL - MSFC - GSFC*
- *S/C 6U - 14 kg: JPL*
- *Mission Design & Nav: JPL*
- *Propulsion: LMP103S (MSFC)*
- *Payload: 4-band reflectometer*
- *I&T: JPL*

Orbit:

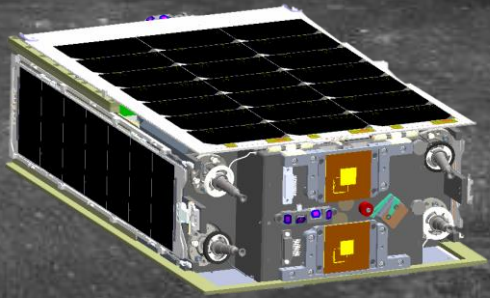
- **Elliptic:** 15-9000Km
- **Period:** 12hrs
- **Perilune:** South Pole
- **Sci Pass:** <6min

Phases/Milestones

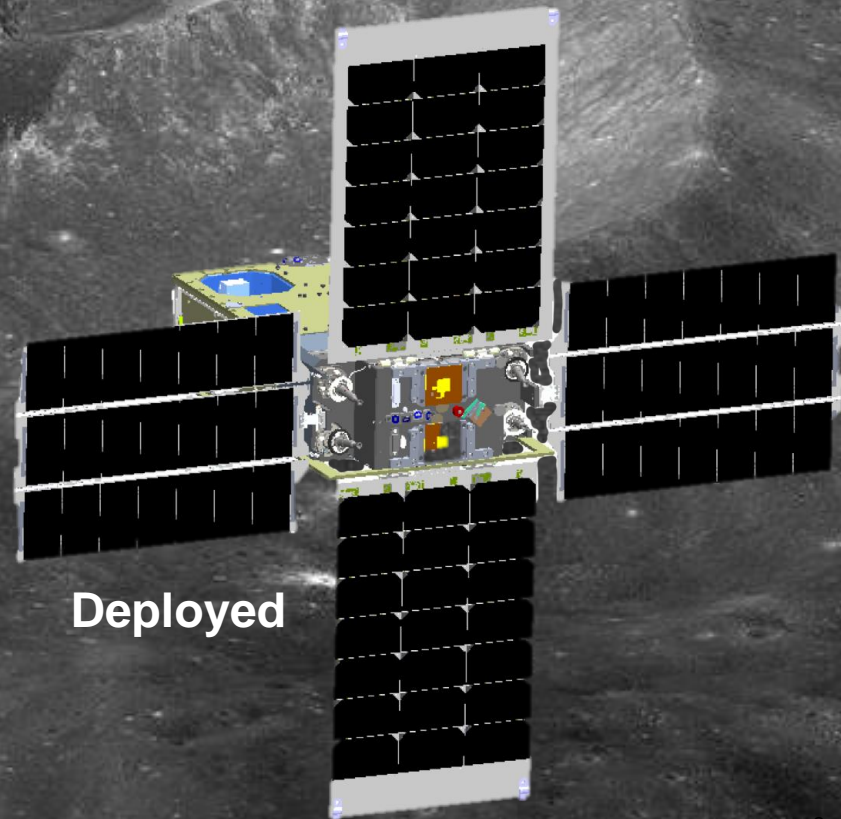
- **Launch:** SLS EM1
- **Schedule:** Launch **June 2020**
- **LOI:** Launch +6 months
- **I&T Start:** July 2019
- **Delivery:** April 2020
- **Phase E:** <1 year



Configurations

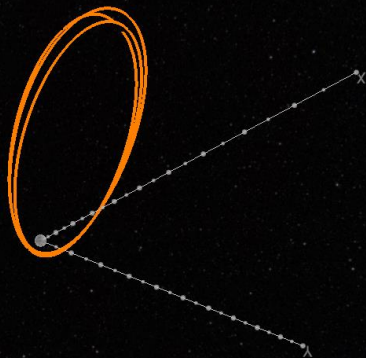


Stowed



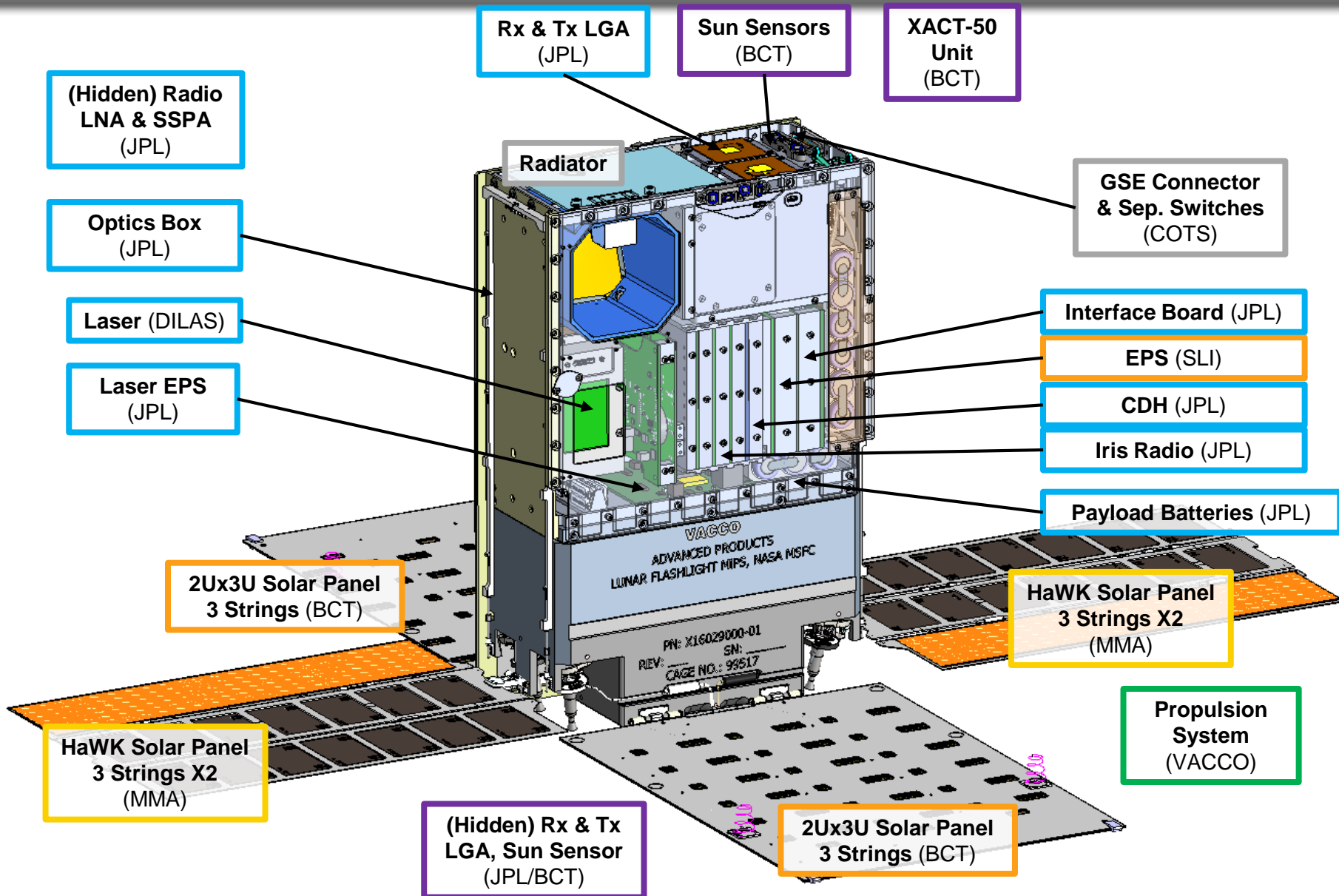
Deployed

Insertion Orbit



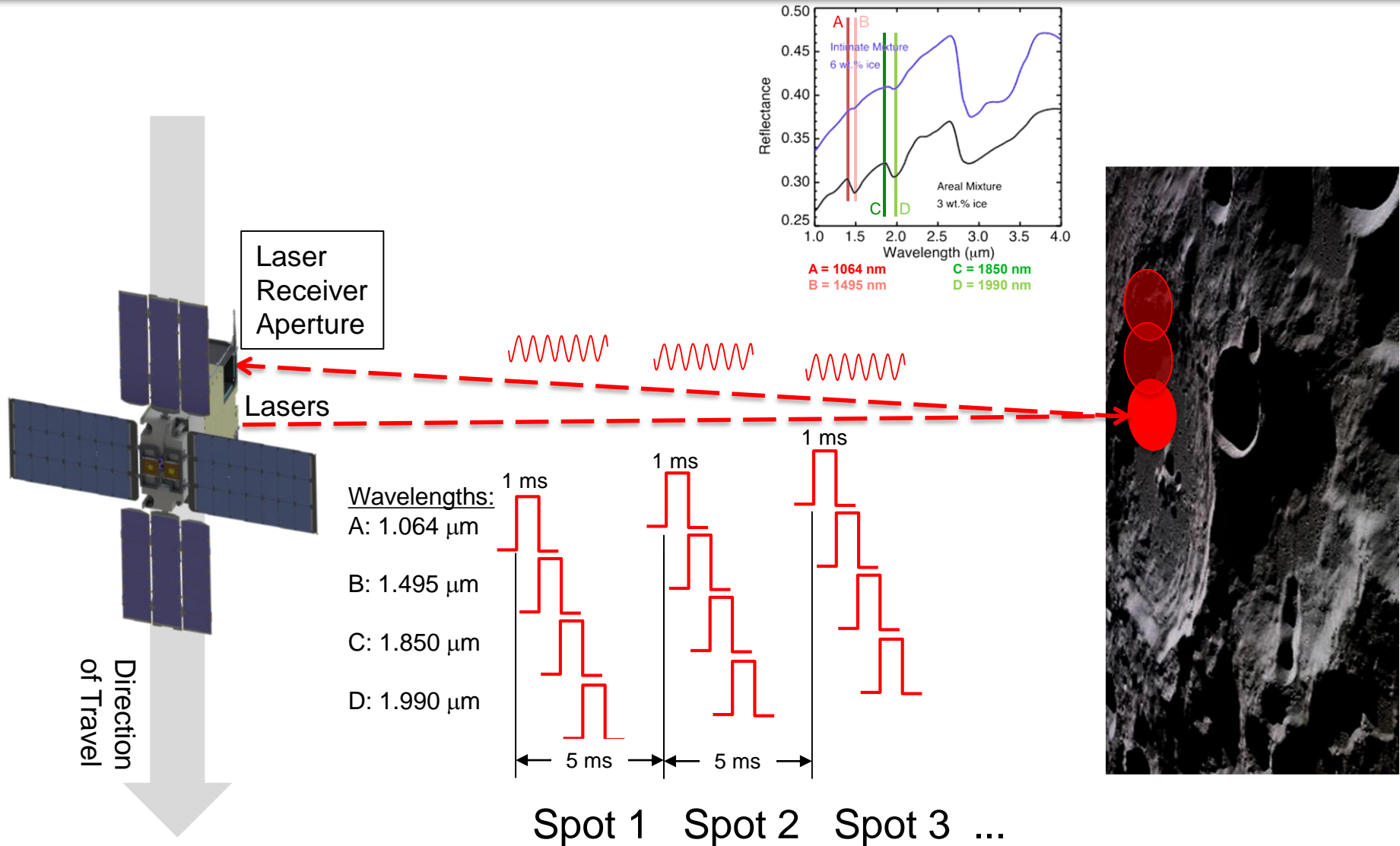


The Lunar Flashlight Spacecraft





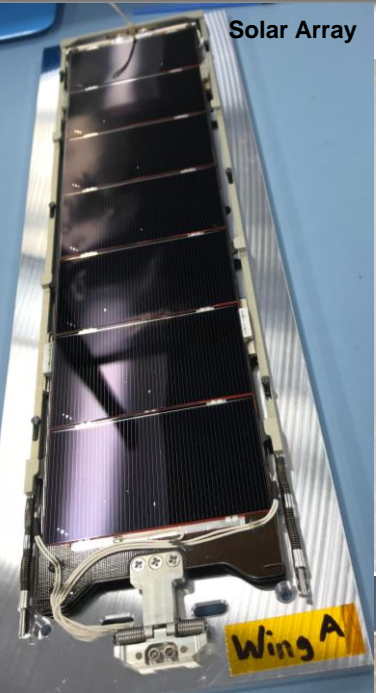
Lunar Flashlight Operational Overview





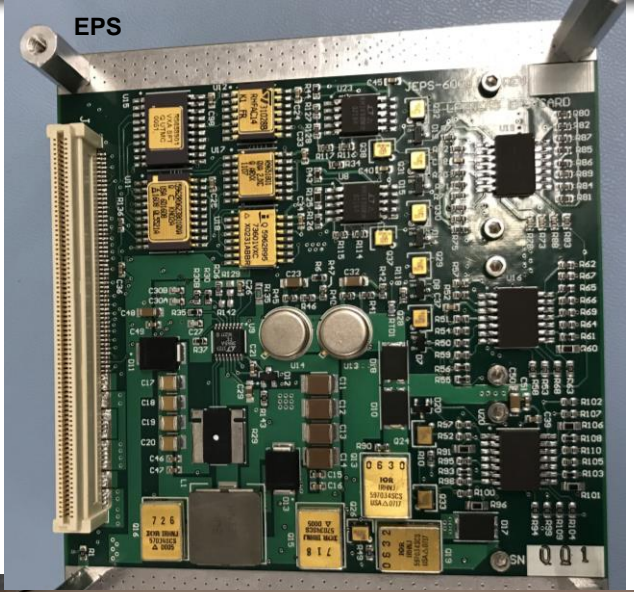
Flight Hardware

Solar Array



Propellant Tank

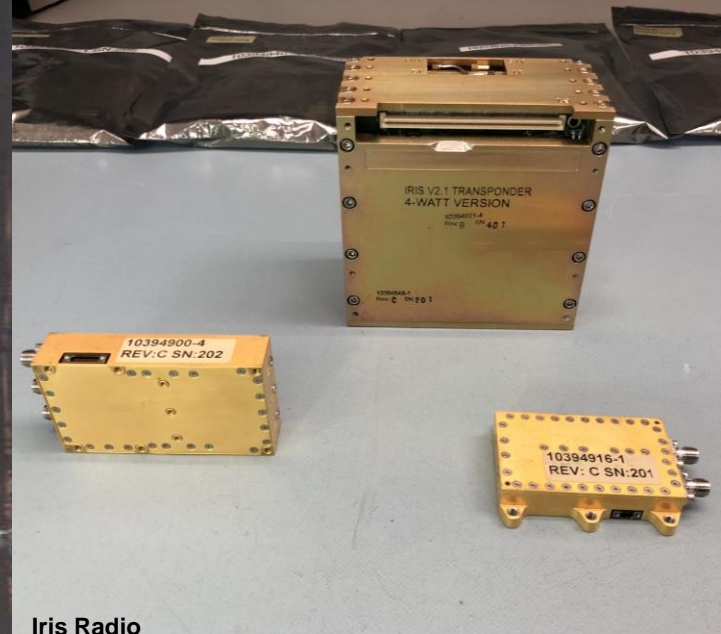
EPS



XACT-50



Thruster Test Firing



Iris Radio



Summary

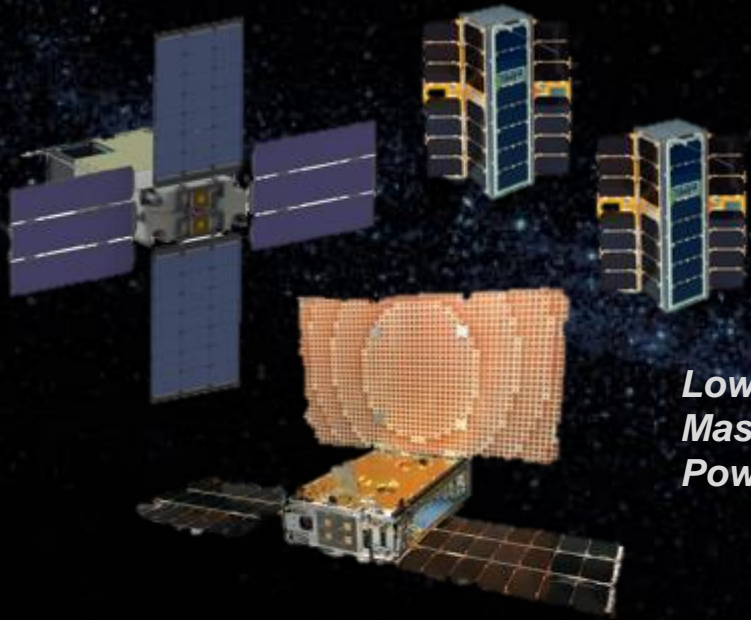
- ◆ **Lunar Flashlight will fly deep space rad tolerant components that stretch the capabilities of a 6U form factor**
 - Iris radio, Sphinx flight computer, green propulsion (~300 m/s), XACT-50 (50mN wheels) ADCS, compact laser and payload
- ◆ **Demonstrating NRHO-like orbit operations will feed forward to other missions as well to use low delta-v solutions for lunar missions.**
- ◆ **Flight hardware is coming in for integration to start this year**
 - Launch NET June 2020



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jpl.nasa.gov/cubesat

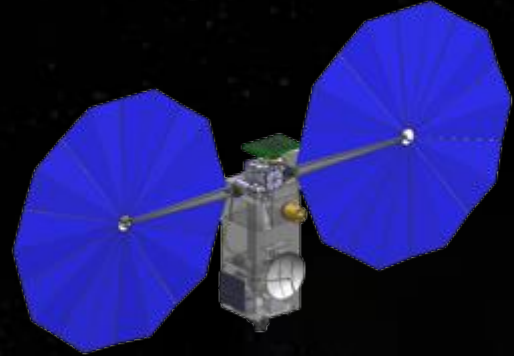
TODAY



*Lower
Mass &
Power*

*Technology Demonstrations
Instruments and spacecraft components*

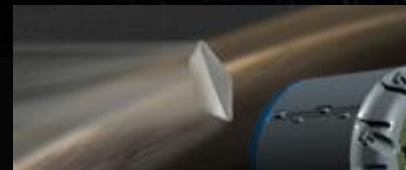
FUTURE



*Lower cost Small Science Missions
Inner solar system (<\$100M)*



More Affordable Outer Planet Missions



Science Probes to New Places