SPACE LAUNCH SYSTEM

SLS CubeSats: It's A SmallSat World After All

David Hitt
SLS Payload Integration
August 6, 2024

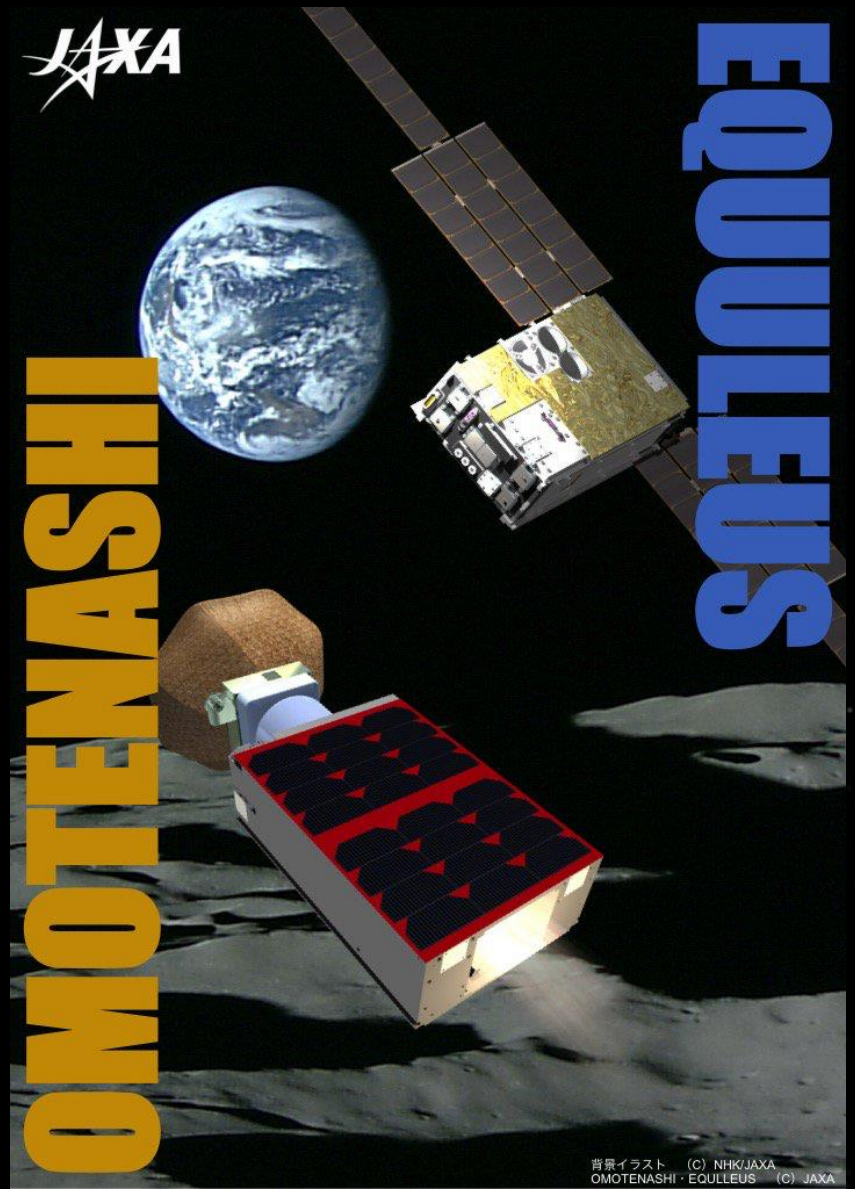
ARTEMIS I TEST FLIGHT RESULTS

- SLS performed within 0.03% of preflight orbital insertion estimates
- Orbital insertion velocity – 25,579.86 ft./sec.
- Orbital insertion apogee – 972.6 nm
- Boosters performed within 0.25% of each other during ascent
- RS-25 engines' thrust and mixture ratio control valves were within 0.5% of pre-flight predicted values
- Record for longest duration RL10 burn at approximately 18 minutes during translunar injection burn
- Flight software overall performance was basically down the middle of predictions

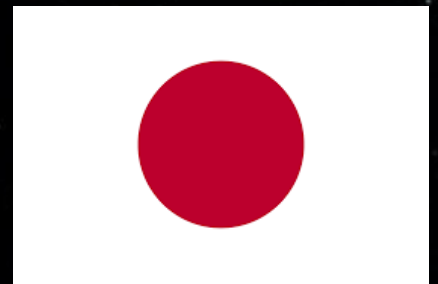
Bottom Line: This machine did the job we designed it to do.

SLS-5016

ARTEMIS I INTERNATIONAL PAYLOADS

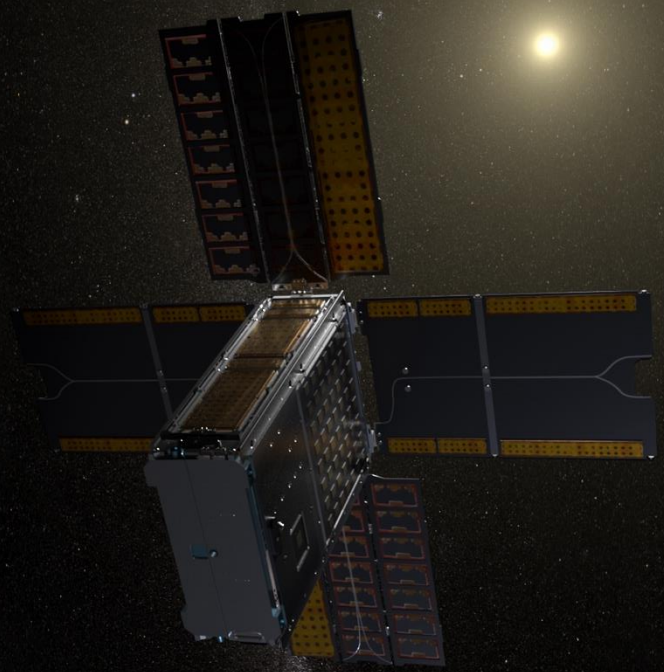


Artemis I Secondary Payloads provided an exciting opportunity for international collaboration (and student involvement).



ARTEMIS I PAYLOADS

Artemis I Secondary Payloads – Deployed November 16, 2022		
CubeSat	**Developer / Location**	**Destination**
Argo Moon	ASI; Turin, Italy	High Earth / Moon Orbit
BioSentinel	Ames Research Center; Moffett Field, CA	Heliocentric Trajectory
CuSP	Southwest Research Institute (SwRI); San Antonio, TX	Heliocentric Trajectory
EQUULEUS	JAXA; Tsukuba, Japan	Earth-Moon L2
Luna H-Map	Arizona State University (ASU); Tempe, AZ	Lunar Orbit
Lunar IceCube	Morehead State University; Morehead, KY	Lunar Orbit
LunIR	Lockheed Martin Space Systems; Denver, CO	GEO
NEA Scout	Marshall Space Flight Center; Huntsville, AL	Near Earth Asteroid
OMOTENASHI	JAXA; Tsukuba, Japan	Lunar Surface (lander)
Team Miles	Fluid & Reason, LLC; Tampa, FL	Heliocentric Trajectory



RESULTS:

- Payload deployment system performed nominally
- 80 percent of payloads confirmed contact with developers post-deployment
- Half of the Artemis I payloads experienced at least partial mission success

ARTEMIS II

FIRSTS:

- Crewed integrated test flight of the SLS rocket, Orion spacecraft, and Exploration Ground Systems (EGS) at NASA's Kennedy Space Center in Florida
- Demonstration of Orion life support systems
- Collection of human data in lunar vicinity, transit to and from the Moon, and through reentry and splashdown

NEW ELEMENTS:

- Orion life support systems
- Launch Complex 39B emergency egress system for crew and new liquid hydrogen system

CUBESATS:

- Working with several international space agencies
- Smaller contingent of 12U CubeSats
- Currently performing safety reviews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