

Launch Services for the Moon. Melissa Sampson¹, ¹United Launch Alliance, 9501 East Panorama Circle, Centennial, CO, 80112, Melissa.sampson@ulalaunch.com

Introduction:

One of the next frontiers is the Moon. United Launch Alliance (ULA) has extensive experience with launching delicate, exquisite payloads throughout our solar system, including the Moon.

ULA is developing a next generation second stage, ACES (Advanced Evolved Cryogenic Stage), which will greatly increase payload capacity to many orbits and locations. It is currently in development and builds on flight proven Centaur heritage. ACES can deliver payloads throughout the Earth Moon system, including to any lunar orbit.

In addition to ACES, ULA is also developing XEUS (eXperimental Enhanced Upper Stage), which is a mission kit added to ACES. XEUS can deliver large payloads, both crew and cargo, to the Moon's surface.

A unique benefit of ACES/XEUS is the ability to utilize distributed launch. Distributed launch significantly increases the amount of payload that can be delivered to the lunar surface. Distributed launch consists of two launches. The first launch puts propellant in Earth orbit. The second launch delivers the payload with ACES. Once both payload and propellant are in orbit, ACES is refueled from the propellant. Now the second stage is largely fueled and out of the majority of Earth's gravity well.

ULA offers a variety of launch services, including ACES/XEUS with lunar surface delivery, in addition to multiple options to deliver other customers to the Moon.

