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Launch Services Program

In 1998, the launch vehicle programs at several NASA centers were consolidated and established as the Launch Services Program (LSP) at the agency's Kennedy Space Center in Florida. The program brings together technology, business, procurement, engineering best practices, strategic planning, studies and cutting-edge techniques – all instrumental components for the U.S. to have a dependable and secure Earth-to-space bridge that is dedicated to launching all types of spacecraft. The LSP skilled workforce strives to facilitate and reinvigorate America's space program by providing reliable, competitive and user-friendly launch services in the commercial arena to satisfy agencywide space transportation requirements and maximize the opportunity for mission success.

The Launch Services Program supports NASA's return to the Moon. For NASA's Artemis architecture, LSP is serving in a major consulting role for the Gateway Logistics Element, the Human Landing System, the Habitation and Logistics Outpost and the Power and Propulsion Element; as well as providing mission management to deliver the Canadian Deep Space Exploration Robotic (DSXR) System to the Gateway. They are also leveraging their expertise in the Venture Class Launch Services (VCLS) for precursor lunar CubeSat missions to reduce technical risk in advance of crewed Artemis campaigns.

The LSP Fleet

All expendable rockets use the same basic technology to get into space – two or more rocket-powered stages, which fall away when their engine burns are completed. Whatever a rocket carries above the final discarded stage is considered the payload. Currently, LSP uses three launch providers to deliver payloads into low-Earth orbit or on deep space missions.

Northrop Grumman Innovation Systems (NGIS) - Pegasus XL

NGIS produces the Pegasus XL, a small expendable rocket that attaches beneath the company's L-1011 Stargazer aircraft, is carried to 39,000 feet and released for launch. It is an airborne-launched rocket. The Pegasus XL can carry a payload up to 992 pounds (450 kilograms) to low-Earth orbit. The rocket weighs about 51,000 pounds (23,133 kilograms) and measures 55.4 feet (16.9 meters) in length and 50 inches (1.27 meters) in diameter. Pegasus has a wing span of 22 feet (6.7 meters).

SpaceX - Falcon 9

SpaceX manufactures the Falcon 9, a reusable two-stage rocket for the safe and reliable transport of satellites and the Dragon spacecraft into orbit. Falcon 9 is capable of carrying payloads weighing up to 50,265 pounds (22,800 kilograms) into low-Earth orbit and up to 18,300 pounds (8,300 kilograms) into geostationary transfer orbit.

United Launch Alliance (ULA) - Atlas V

ULA offers multiple configurations of the Atlas V rocket to carry payloads ranging from four- to five-meter-diameter fairing in size. That is more volume than an average single-family home. Up to five solid rocket boosters can be added to the rocket to increase its performance. The Atlas V can carry a payload weighing up to 41,570 pounds (18,850 kilograms) to low-Earth orbit.

Delta IV and Delta IV Heavy

ULA also offers the Delta IV, including the Heavy configuration most recently produced by them, which has solid motors, liquid-fueled first and second stages, and a solid-propellant third stage. The Delta IV can carry payloads weighing up to 30,440 pounds (13,810 kilograms) to geostationary transfer orbit. The Delta IV Heavy can carry payloads weighing up to 62,520 pounds (28,370 kilograms) into low-Earth orbit, depending on vehicle configuration.

An artist illustration of the rockets used by Launch Services Program. From left, are the Northrop Grumman Innovation Systems Pegasus XL attached beneath the company's L-1011 Stargazer aircraft, the United Launch Alliance (ULA) Atlas V, the SpaceX Falcon 9 and the ULA Delta IV Heavy. Photo credit: NASA

Selected Historical Missions

Origins, Spectral Interpretation, Resource Identification, and Security-Regolith Explorer (OSIRIS-REx)

OSIRIS-REx launched atop a United Launch Alliance Atlas V rocket on Sept. 8, 2016, from Cape Canaveral Air Force Station in Florida on a seven-year mission to and from a nearby asteroid. The groundbreaking mission is the first U.S. mission to travel to near-Earth asteroid Bennu, map its surface using 3-D laser imaging, retrieve samples from the surface and return to Earth. The spacecraft completed its 1.2 billion-mile journey and arrived at asteroid Bennu in Dec. of 2018. OSIRIS-REx is scheduled to return the sample to Earth in 2023.

Transiting Exoplanet Survey Satellite (TESS)

NASA's newest planet hunter, TESS, is the next step in the search for planets outside of our solar system, including those that could support life. The mission will survey the entire sky over the course of two years and will analyze 200,000 of the brightest stars near the Sun to search for transiting exoplanets. TESS launched on April 18, 2018, aboard a SpaceX Falcon 9 rocket from Cape Canaveral Air Force Station in Florida. During its first year of science, TESS has discovered 21 planets outside our solar system and captured data on other interesting events occurring in the southern sky.

Parker Solar Probe

NASA's historic Parker Solar Probe mission will revolutionize our understanding of the Sun. The mission will "touch the Sun," traveling through its atmosphere, closer to the surface than any spacecraft before it, facing brutal heat and radiation conditions — and ultimately providing humanity with the closest-ever observations of our star. The spacecraft launched aboard a United Launch Alliance Delta IV Heavy rocket on Aug. 12, 2018, from Cape Canaveral Air Force Station in Florida.

Mars Interior Exploration using Seismic Investigations, Geodesy and Heat Transport (InSight)

NASA's InSight is the first mission to study the deep interior of Mars. The spacecraft launched on May 5, 2018, aboard a United Launch Alliance Atlas V rocket from Vandenberg Air Force Base in California. InSight landed on Mars on Nov. 26, 2018. The Mars lander is using the seismic waves generated by marsquakes to develop a map of the planet's deep interior. The resulting insight into Mars' formation will help us better understand how other rocky planets, including Earth, were and are created.

LSP has launched several of NASA's Mars Exploration Program historical missions including NASA's Mars Exploration Rovers (Spirit and Opportunity), Mars Science Laboratory (Curiosity) and more. In July 2020, LSP will launch the agency's next rover to the Red Planet called Mars 2020.

The United Launch Alliance Delta IV Heavy rocket launches NASA's Parker Solar Probe to touch the Sun, at 3:31 a.m. EDT on Aug. 12, 2018 from Launch Complex 37 at Cape Canaveral Air Force Station, Florida. Photo credit: NASA/Bill Ingalls

A SpaceX Falcon 9 rocket lifts off from Space Launch Complex 40 at Cape Canaveral Air Force Station in Florida, carrying NASA's Transiting Exoplanet Survey Satellite (TESS) at 6:51 p.m. EDT on April 18, 2018. Photo credit: NASA

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