After delay, Delta IV Heavy lifts off for the last time

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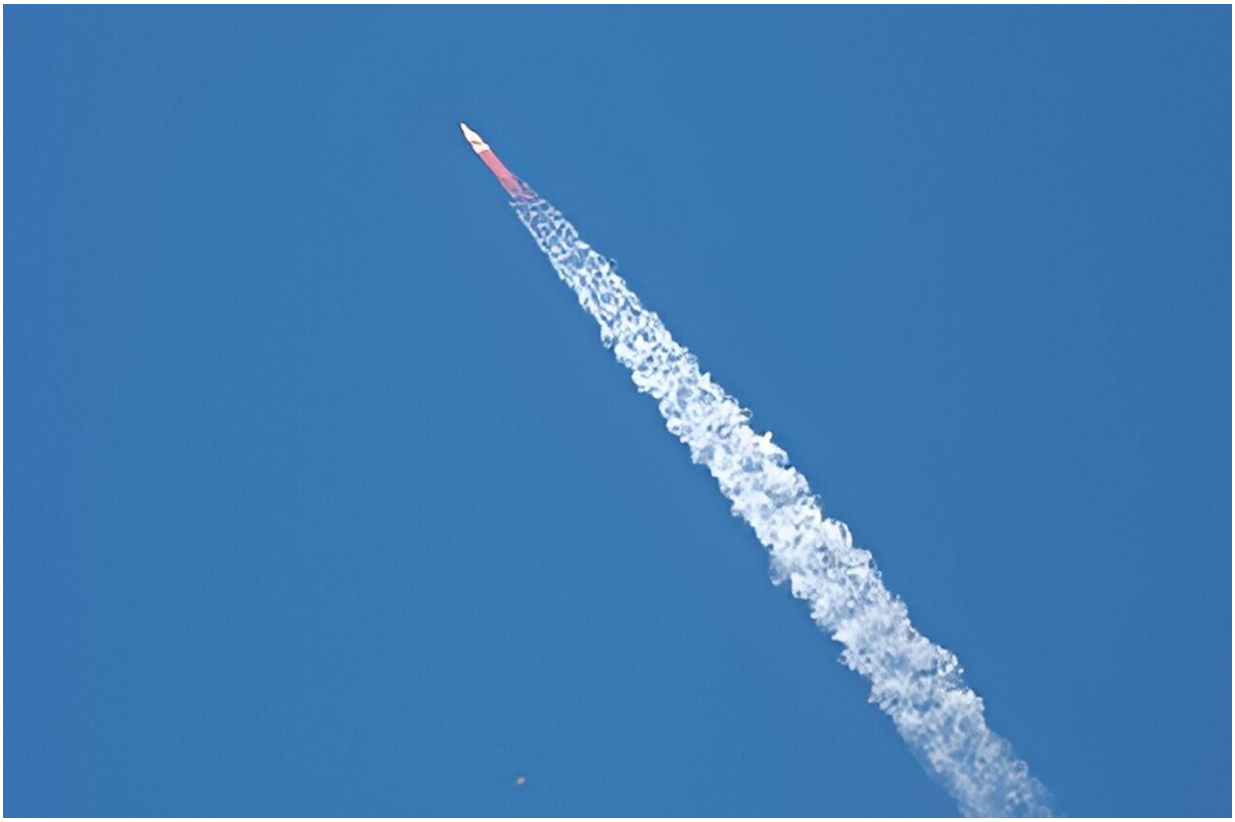

Delta IV Heavy Contrail. Credit: camelNotation. Wikimedia Commons Creative Commons CC0 1.0 Universal Public Domain Dedication

The storied career of the Delta family of rockets had to wait a little longer than planned to turn the page on its final chapter, but the last of

its kind lifted off on the Space Coast on April 9.

A United Launch Alliance Delta IV Heavy, the largest and most powerful version of Delta rockets, launched from Cape Canaveral Space Force Station's Space Launch Complex 37 at 12:53 p.m. Eastern time. Dubbed the NROL-70 mission, the classified payload is for the National Reconnaissance Office.

The rocket had come within four minutes of the countdown clock hitting zero back on March 28, but teams discovered an issue with a pipeline of gaseous nitrogen used to supply the inert gas needed for safe operations on liftoff that took several days to remedy before ULA and its customer were OK to try again.

The first Delta rocket attempted a liftoff in May 1960 when Dwight Eisenhower was president. They've been responsible for launching Mars rovers, space telescopes, solar probes, weather satellites and more during a 63-year-run.

This final launch makes 389 launch attempts through a series of rocket design changes. The Delta II retired in 2018 with the last medium-lift version of the Delta IV flying in 2019. The Delta IV Heavy, which had flown 15 times before this launch since its debut in 2004, was the lone remaining rocket of the Delta family. They are making way, along with the final 17 Atlas V rockets, for ULA's Vulcan Centaur rocket that debuted in January.

"It's a bittersweet moment for us. This is such an amazing piece of technology," said ULA President and CEO Tory Bruno. "It's the most metal of rockets setting itself on fire before it goes to space."

The Delta IV Heavy features three core boosters powered by cryogenic liquid hydrogen and liquid oxygen that generate more than 2.1 million

pounds of thrust on liftoff.

The way the propellant flows ahead of liftoff creates a massive fireball on the launch pad.

This also marks the final ULA launch for SLC 37, which is being considered as a future home for SpaceX Starship and Super Heavy launches.

"Retiring it is obviously the future for a less expensive, higher performance rocket. It's still sad. However it is an honor for us to serve these missions," Bruno said.

The first Delta launch attempt came May 13, 1960, from Canaveral's Space Launch Complex 17. Its design was born from the Thor intermediate-range ballistic missile and could send up 400 pounds of payload to low-Earth orbit. Back then it stood at 90 feet tall and weighed 112,000 pounds generating only 150,000 pounds of thrust at liftoff.

Among its payloads over the years, Delta rockets have launched NASA's Pioneer and Explorer spacecraft, The first Mars rover Sojourner on the Pathfinder mission plus twin rovers Spirit and Opportunity, the Dawn mission that visited Ceres and Vesta and the Deep Impact that slammed into the comet Tempel 1.

They have launched the Spitzer and Kepler space telescopes, Parker Solar Probe, the NOAA's GOES satellites and dozens of GPS satellites.

While many Delta IV Heavy flights have been classified missions for the military, it was also the rocket that sent up the first Orion spacecraft on its test flight back in 2014 on the EFT-1 mission, a precursor to the Artemis missions on which Orion now flies.

The last Delta IV Heavy mission is classified again, an NRO satellite that will "strengthen the NRO's ability to provide a wide range of timely intelligence information to national decision makers, warfighters, and intelligence analysts to protect the nation's vital interests and support humanitarian efforts worldwide."

The launch became the 25th from the Space Coast in 2024, but only the second for ULA after the Vulcan launch in January. The company flew only three times in 2023 while competitor SpaceX racked up 98 orbital launches across its Florida and California launch pads.

The coming years, though, promise to get busier for ULA.

ULA still has 17 more Atlas V rockets in its stable including seven set aside for the Boeing CST-100 Starliner missions to bring crew to the International Space Station. The first test flight with humans on board is slated for as early as May 6 with operational missions that could fly once a year from 2025–2030.

Another eight Atlas V rockets are set aside to fly up satellites for Amazon's Project Kuiper internet constellation. The other two Atlas V missions are set aside for its final Space Force flight later this year and a private communications satellite in 2025.

Meanwhile, ULA is ramping up Vulcan Centaur hardware with its next mission as early as this summer to fly Sierra Space's Dream Chaser cargo spacecraft to the ISS. That also acts as the second certification flight for Vulcan that then opens up a slew of Space Force missions on its plate.

"All of the hardware that I'm building right now in my supply chain and in the factory where I've got four or five boosters in flow … are good to go," Bruno said.

He said the goal is to launch from the Cape once every two weeks.

"We are literally building ahead so we can build up inventory and then come on into that as infrastructure comes online," he said. Here at the Cape, the most important and visible thing is a whole other Vertical Integration Facility … the bottleneck is integrating the rockets. So now there'll be two lanes, so we'll be building two rockets all the time simultaneously."

A big chunk of those are dozens of more launches for Project Kuiper that have to fly before 2026.

"We're feeling pretty good about the ramp up," Bruno said. "I'm not going to BS you, it will be tight in '24 and into '25, the first half, but we are on track, we're pretty confident we'll hit that tempo when we need to late next year."