

The Rocket-man Ed - W6RDZ's Rocket Report for: 06/11/2024

(6/04/2024 through 06/18/2024)

Last Week's Launches: Wow! What a week for spaceflight! Two historic test flights of spacecraft with the word "Star" in their name, and great things happening on the far side of the moon! We had 6 launches the past week, 5 US - two of which were manned, and 1 Chinese commercial launch - the third in a week for Galactic Energy!

1. Drum-roll please: The first Launch of the week WAS... wait for it Boeing's Starliner Crewed Test Flight!

Yes, the third time was a charm! Wednesday **June 5th**, at 08:52 MDT, NASA astronauts Suni Williams and Butch Wilmore **finally** made it into orbit on the first Crewed Test Flight of Boeing's Starliner capsule. The crew's workhorse Atlas V rocket roared to life, followed and instant later by two strap-on solid rocket boosters and headed to the International Space Station! All this after two recent launch scrubs and numerous delays in the past month, and years of development delays.

This mission was the **100th Atlas V** to fly, and the first to carry a crew. Pilot Suni Williams became the first female astronaut to fly on the maiden flight of an orbital crewed vehicle, and this was ULA's third mission this year.

The spacecraft docked with the International Space Station on June 6, about 26 hours after launch from Cape Canveral Florida. Starliner had five onboard thrusters go dead, delaying its ISS docking, and causing Butch Williams to take over manual control to successfully dock to the ISS.

Wilmore and Williams **were** scheduled to return to Earth on Friday, June 14. **However**, the mission has been extended until **Thursday June 18**, pending weather, and Starliner's readiness, when it will undock and land several hours later at White Sands Missile Range in New Mexico.

A number of small issues with Starliner have arisen, but nothing major. A sublimator in a cooling system used a bit more water than anticipated on the flight up. The original Helium leak that scrubbed the May 25th launch, continues, and more have occurred after the shaking from the launch. Boeing and NASA said in an update on Monday, that the Starliner is experiencing a total of five "small" helium leaks as its test flight test continue. Helium is used to pressurize the spacecraft's reaction control system (RCS) maneuvering thrusters, allowing them to fire. Boeing says "While Starliner is docked, all the manifolds are **closed** per normal mission operations preventing helium loss from the tanks", and that there should be plenty of Helium for the 7 hour return flight, and are in no danger.

We are all looking forward to the Starliner and the Crew's safe return on June 18th, in the New Mexico desert!

2. Later the same day, **Wednesday June 5th**, at 23:00 MDT, **China's Galactic Energy** launched yet another **Ceres 1 rocket!** This was Galactic Energy's **third** Ceres 1 launch in a week! This one launched for the Jiuquan satellite launch center in the Gobi desert,

China. This was the "Love On Top" mission, successfully placing 3 satellites into Sun Synchronous orbit: the TEE-01B and two Naxing -3A/B satellites.

3. The BIG LAUNCH OF THE WEEK! was Space-X's Flight Test Four of the Starliner and Super Heavy Booster! rocket. : On Thursday, June 6th, Space-X's Starship Flight successfully departed from Orbital Launch Pad A, Starbase, Boca Chica Texas, at 06:50 MDT! Elon guaranteed excitement and wow!, he delivered!

Adrian Bell of NasaSpaceFlight reports:

"Just over a year after the first integrated flight test, SpaceX successfully launched the fourth flight of Starship on Thursday. For the first time, Super Heavy completed a successful landing burn while Starship made it through reentry – despite extensive burn damage to a forward flap – and softly landed in the Indian Ocean. This marks a major step in the Starship program and paves the way for future, more intensive test flights."

"Flight 4 of Starship lifted off from the Orbital Launch Pad at SpaceX's Starbase site in Boca Chica, South Texas at 7:50 AM CDT. Notably, one outer Raptor engine shut down just after liftoff, something not seen since the first flight of Starship in April 2023.

After the third flight reached atmospheric reentry without attitude control, this flight aimed to push further into reentry, proving the thermal protection system (TPS) on Ship 29.

With a still-red-hot forward flap and enough control still available, Ship 29 was able to reignite its sea-level Raptor engines and softly touch down in the Indian Ocean, bringing the fourth Starship flight test to a close. The ship likely broke up after tipping over.

On the booster side, Flight 4 aimed to test fixes for the blockage issues that caused early shutdowns of several Raptor engines on the previous booster, Booster 10, as it attempted to land in the Gulf of Mexico. These fixes seemed successful, as Booster 11 touched down softly in the Gulf before tipping over – even though one of the 13 engines failed to reignite for landing. Based on comments from Elon Musk after the flight, SpaceX may choose to attempt a catch on the next mission.

Further changes to the flight profile included the jettison of the hot staging ring just after the end of the boostback burn. The hot stage ring allows the exhaust of the ship's engines to be safely directed away when they ignite while still attached to the booster.

Since the ring features heavy shielding, it adds a considerable amount of mass to the booster. This is why SpaceX has opted to jettison the ring to increase the chances of booster landing success during this test phase. When it debuts at a yet-unknown date,

Starship V2 will feature a much lighter hot stage ring permanently fixed to the forward end of the booster."

The successful landing of both Super Heavy booster and Starship marks a huge step forward for the program and for manned space exploration! Space-X intends to fly STF-5 in just the next two months!

For a fantastic video flight summary check out YouTuber **Scott Manly's** video: "[Space-X's Starship Literally Melted](#)" on YouTube!

4. Friday, June 7th, at 19:58 MDT **Space-X** launched **Starlink Group 10-1** from **Cape Canaveral**. It was Booster B1069's 16th flight. I was the first launch into the 10 shell. It was delayed due to clouds and a thunderstorm.

5. The launch was followed the next day, **Saturday, June 8th**, 06:58 MDT, by **Starlink Group 8-8**, successfully launched on a **Falcon-9**, from **Vandenberg**. 20 Starlink satellites reached LEO. It was Booster B1061's 21st flight, the second booster to reach this record, and Space-X's 60th mission of 2024. The payload of 20 Starlinks is believed to contain 13 of the Direct to Cell variants.

6. On Saturday June 8th, at 08:26 MDT, **Virgin Galactic** successfully launched the **Galactic-07** mission on **SpaceShipTwo** from the VMS Eve, from **Spaceport America New Mexico**. The planned trajectory is suborbital, and this is the final commercial flight of VSS Unity. The Galactic 07 mission was Virgin Galactic's 11th manned spaceflight and SpaceShipTwo's 7th commercial mission. The commercial crew on this mission was composed of a researcher affiliated with Axiom Space, two private Americans, and a private Italian. The Virgin Galactic crew on Unity was Commander Nicola Pecile and pilot Jameel Janjua. This will be Virgin Galactic's last flight for quite sometime. This was the VSS Unity's last flight. Virgin Galactic will now focus on building a new, improved, space-plane, Their Delta Two variant. VG expects that to take about 18 months until its first flight.

Other Space News for the week:

1. Update on China's Lander of the Far side of the Moon: As reported last week China's Lunar Lander landed successfully on the Lunar Far Side. Samples were collected and blasted in Lunar Orbit with the ascender. .

Update: The sample return ascender successfully docked with the orbiter and was loaded into the reentry return vehicle. The lander deployed a small rover! The lander and rover are returning fantastic high Res photos!

2. Update: Gyro troubles on the Hubble: Ground controllers were unable to refurbish the failing gyro this time. Ground control shut down another gyro to save it for the future. The Hubble is now in one gyro mode. It can operate like this but with reduced capability.

Upcoming launches for next week:

1. Starlink Group 10-2 is scheduled to launch tomorrow, Wednesday, June 12, at 15:30 MDT from Cape Canaveral.

2. Starlink Group 9-1 is scheduled for launch Thursday, June 13th on a Falcon-9 out of Vandenberg.

3. Rescheduled a week back to, Monday, June 17th, Space-X plans to launch Astra 1P/SES-24 mission on a Falcon 9, from SLC-40, Cape Canaveral. The one Astra satellite payload is a classic wide-beam satellite, will support SES's prime TV neighborhood, and enable content owners, private and public broadcasters across Germany, France, and Spain, to continue broadcasting satellite TV channels. The Space-X Falcon 9 will take the satellite to Geostationary transfer Orbit.

4. And the final launch scheduled to the upcoming week: - Tuesday, June, 18th at 12:13, Rocket Lab plans to launch the "No Time Toulouse" mission on an Electron Curie rocketed from the Miahia Peninsula in New Zealand.