Rocket Report: South Korea’s SpaceX dilemma, Rocket Lab finds a quick fix

Enlarge / An overview of Astra’s picturesque launch site for Rocket 3.1.

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Welcome to Edition 3.11 of the Rocket Report! A lot of the most interesting news this week came in the world of small launch, with Electron announcing a quick return to flight as well as boosting the capacity of its Electron booster. We were also surprised to see such a robust fundraising effort by ABL Space Systems.

As always, we welcome reader submissions, and if you don’t want to miss an issue, please subscribe using the box below (the form will not appear on AMP-enabled versions of the site). Each report will include information on small-, medium-, and heavy-lift rockets as well as a quick look ahead at the next three launches on the calendar.

Astra attempts launch of second orbital rocket. The launch window for launching Rocket 3.1 from the company’s spaceport on Kodiak Island, Alaska, opened Sunday night. A combination

of technical issues with the rocket and ground systems, as well as weather issues, precluded launches on Sunday through Wednesday.

Slipping toward the end of the window … The company is now aiming to fly on Thursday, August 6, with the window opening at 7pm PST (02:00 UTC Friday). The goal for this flight, which will carry no commercial payload, is to get through the first-stage firing. Lighting the second stage and getting into orbit will be gravy, company CEO Chris Kemp told reporters last week. We wish Astra well. (submitted by Ken the Bin)

Virgin Galactic delays commercial flights to 2021. Virgin Galactic has pushed the beginning of commercial flights of its SpaceShipTwo suborbital vehicle to no earlier than the first quarter of 2021 while announcing plans to sell additional stock to raise money, SpaceNews reports. The company, in its fiscal second-quarter financial results released Monday, said it expected to perform two more test flights of SpaceShipTwo from Spaceport America in New Mexico, both of which will be powered flights.

And then, the knight … "Presuming things go as expected on this fully-crewed flight, we would then plan to fly Sir Richard Branson on the third powered flight from New Mexico," said George T. Whitesides, the company's chief space officer. This would mark the beginning of commercial service. At this point, we're in the we'll-believe-it-when-we-see-it camp on Virgin Galactic's plans for commercial space tourism. (submitted by JohnCarter17)

The Rocket Report: An Ars newsletter

The easiest way to keep up with Eric Berger's space reporting is to sign up for his newsletter, we'll collect his stories in your inbox.

Rocket Lab announces return to flight this month. In a fairly quick turnaround, Rocket Lab says it has received approval

from the Federal Aviation Administration to resume launches this month after identifying an anomalous electrical connection as the cause of an in-flight failure on July 4, 2020. The investigation was able to confidently narrow the issue down to a single anomalous electrical connection.

Targeting August return-to-flight mission … "The issue occurred under incredibly specific and unique circumstances, causing the connection to fail in a way that we wouldn't detect with standard testing," Rocket Lab chief Peter Beck said. "Our team has now reliably replicated the issue in test and identified that it can be mitigated through additional testing and procedures." Separately, Rocket Lab also announced an impressive increase in Electron's payload capacity from 225kg to 300kg to low Earth orbit. (submitted by trimeta, Unrulycow, Ken the Bin and platykurtic)

ABL secures new funding. ABL Space Systems, a three-year-old startup developing a launch vehicle for small satellites, announced this week that it has received two US Air Force contracts worth $44.5 million, and secured $49 million in new private funding. ABL says it is planning the first orbital launch of its RS1 vehicle in 2021.

On fundraising during a pandemic … "We did close the round during the COVID-19 pandemic. No doubt there have been serious challenges in many people's lives this year, but I think the rhetoric around small launch funding being completely frozen and necessitating industry-level bailouts is a bit exaggerated," founder and CFO Dan Piemont told SpaceNews. This is a good amount of money, and the company's technology seems to be maturing. We'll be eager to see where ABL goes. (submitted by JohnCarter17 and Ken the Bin)

Virgin Orbit will carry NASA payloads on second launch. In a lengthy blog post, Virgin Orbit said it had determined the root cause of its first launch-attempt failure: "A breach in the high-pressure line carrying cryogenic liquid oxygen to our

first stage combustion chamber due to a component failure. Without a supply of oxidizer, that engine soon stopped providing thrust, ending our powered flight and ultimately the test itself."

Updating second Launch Demo mission … The company says flight hardware is in "final integration" now and will soon be shipped to Mojave, California, for tests. Notably, for the second mission, NASA has agreed to launch 11 CubeSats for its CubeSat Launch Initiative. This shows an admirable risk tolerance on NASA's part and some confidence on Virgin's part. The company plans to conduct this flight "towards the end of this year."

Ariane 5 rocket now targeting August 14. On July 31, with less than three minutes to go in the countdown, the launch of an Ariane 5 rocket carrying three satellites was called to a halt. The reason? A technical issue involving "unexpected behavior" of a sensor inside the liquid-hydrogen tank of the main stage.

Return from the pandemic … Following this, the rocket was transferred back into the Final Assembly Building at the launch site in Kourou, French Guiana. This week, Arianespace announced a new launch date for the mission, August 14, "with the possibility of an optimization in the process for the mission to be performed one day earlier." This is an important mission and the first to fly from Kourou since the spaceport shut down earlier this year due to COVID-19. (submitted by Ken the Bin)

After delays, Starlink mission returns to launch pad. Following a six-week delay for undisclosed reasons, SpaceX raised a Falcon 9 vertical on its launch pad Thursday at the Kennedy Space Center in Florida, Spaceflight Now reports. The

company will try again early Friday to launch the company's next batch of Starlink Internet relay stations and a pair of commercial BlackSky Earth-imaging microsatellites.

Late night launch … Liftoff is set for 05:12 UTC Friday. This will be SpaceX's first launch to carry a full set of Starlink satellites equipped with new sunshades, or visors, in an attempt to make the spacecraft less visible to ground-based telescopes, addressing concerns voiced by astronomers that thousands of Starlink satellites could interfere with scientific observations.

South Korea mulls exiting its own launch program. South Korean defense industry analysts say the nation would have difficulty competing with other countries in the launch industry, which can provide more advanced technologies and services at lower prices with their already established space-industry infrastructure. "Even if South Korea develops its own rockets, they would not be able to excel more than aerospace giants like SpaceX in terms of technology," said Shin Jong-woo, a senior researcher at the Korea Defense and Security Forum, in The Korea Times.

Ten times the cost … The country's space institute, KARI, has developed several small-satellite rockets, but these are not competitive with SpaceX's Falcon 9, which recently launched South Korea's first military communications satellite, ANASIS-II. "The costs spent by the South Korean government to develop the two rockets were 10 times higher than those spent by SpaceX," Kim Seung-jo, former president of KARI, said. "But the South Korean government's outcomes in its rocket projects were far behind the Falcon 9 rocket produced by SpaceX." (submitted by JohnCarter17)

SES selects SpaceX, ULA for commercial launches. In separate news releases, SES announced deals with America's two leading launch companies. SpaceX will provide launch capability for up to three of its C-band satellites over two Falcon 9 launches,

and one United Launch Alliance Atlas V will carry the two stacked satellites. Only US rockets were considered for the commercial missions.

No Vulcan for this one … The launch of the C-band satellites will facilitate the distribution of the 5G network across the United States. The announcement is notable for a couple of reasons: first of all, it's rare for ULA to win a purely commercial contract. Secondly, the ULA mission will fly on an Atlas V, rather than a Vulcan rocket. This may indicate some lack of confidence on SES' behalf about the readiness of Vulcan in 2022. (submitted by JohnCarter17 and Ken the Bin)

Swarm to launch on a Falcon 9 rideshare. Swarm Technologies is working with Exolaunch of Germany to send 24 SpaceBee satellites into orbit on the SpaceX Falcon 9 small-satellite ride-share mission scheduled to launch in December. Exolaunch, a ride-share launch and satellite-deployment company, will handle launch, integration, and deployment of SpaceBee satellites in sun-synchronous orbit, SpaceNews reports.

Targeting December … Earlier this year, Exolaunch announced an agreement with SpaceX to send multiple small satellites into orbit on the December ride-share flight. For the December launch, Exolaunch plans to integrate microsatellites and cubesats on a Falcon 9 Evolved Expendable Launch Vehicle Secondary Payload Adapter port and to send the satellites into orbit with EXOpod, the firm's proprietary deployment system. (submitted by Ken the Bin and JohnCarter17)

The Atlas V launch to Mars sure was gorgeous. Last Thursday, an Atlas V rocket launched NASA's latest rover, Perseverance, to the Red Planet. For this mission, NASA chose an Atlas V rocket with four solid rocket boosters. Yes, this is a gratuitous photo gallery.

Smoke and fire … The rocket built by United Launch Alliance took flight under clear skies from Cape Canaveral Air Force

Station, and, well, we'll stop writing because the photos of this epic launch speak for themselves. We're not sure we've ever seen a more breathtaking Atlas V launch.

Starship prototype makes its first flight. On Tuesday evening, a little more than an hour before the Sun sank into the rolling Texas horizon, this Starship prototype rumbled to life and left the ground for the first time. It rose from a stand, with its single Raptor rocket engine burning clean. Then the 30-meter-tall vehicle ascended to about 150 meters, moved laterally, and began to descend before safely landing, Ars reports. This prototype lacked key structural elements, including a large nose cone, flaps, an interstage, and more. But critically, this vehicle contained Starship's propulsion system.

Larger hop late this year? … After Tuesday's test, the program's next steps are unclear. Tuesday's vehicle was Serial Number 5, or SN5. It probably will now be retired. Inside the tents and high bays in South Texas, SpaceX has components for SN6, a separate pathfinder tank that uses a new steel alloy, and SN8. This latter vehicle is likely to have a nosecone fairing and flight-control surfaces, and it will probably increase the number of Raptor engines to three. This vehicle might possibly make a test flight up to 20km later this year.

Next three launches

Aug. 7: Rocket 3.1 | Second launch attempt of Astra booster | Kodiak Island, Alaska | 02:00 UTC

Aug. 7: Falcon 9 | Starlink-9 mission | Kennedy Space Center, Fla. | 05:12 UTC

Aug. 14: Ariane 5 | Galaxy 30, MEV-2 & BSAT-4B satellites | Kourou, French Guiana | 21:33 UTC

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