

Rocket Report: Virgin Orbit targets Mars, SpaceX to launch rideshares on time

Enlarge / The mighty Delta IV Heavy rocket takes to the skies.

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Welcome to Edition 2.18 of the Rocket Report! This week has produced a lot of news about medium-lift rockets, particularly around the issue of commercial crew—is the hardware finally ready?—as well as rideshare missions. There’s also some nifty news about the Falcon 9 brute-forcing its way into a polar orbit from Cape Canaveral in Florida.

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.

Virgin Orbit to launch Mars smallsat mission. In what would be a landmark for small-satellite launch vehicles, Virgin Orbit announced this week that it plans to become the first private company to send cubesats to Mars. The company said it is

partnering with nearly a dozen Polish universities and a Polish satellite maker called SatRevolution to design up to three robotic missions to the Red Planet over the next decade, The Verge reports.

A promising development ... The first mission could launch as early as 2022; it and its successors will follow NASA's pioneering work with the MarCO cubesats that returned images from Mars after tagging along with the Mars InSight mission launched in 2018. Truthfully, this combination of miniaturized satellite technology and cheap launch is one of the most promising developments for exploration of the Solar System that has come along in a long time. We hope this is the first of many such missions. (submitted by danneely)

Scottish spaceport gets preliminary approval. A council in Scotland has signed off on early plans for a spaceport in the Scottish Highlands, although it says it wants more information about environmental impacts. Developers have described the site as 815 acres of sweeping moorland and the peat bog on the peninsula of A'Mhoine, close to, bounding or within a range of environmental designations.

More details forthcoming ... A full planning application is expected by the end of the year. It will almost certainly face more questions, the Press and Journal reports. As local council member Craig Fraser asked, "My question is, given the Scottish Government and Highland Council recognize a 'climate emergency,' how does building a space port on this carbon sink, which is what the peatlands and Flow Country are, assist in this aspiration?"

SpaceX appears to be prioritizing Demo-2 mission. On Tuesday, SpaceX founder Elon Musk offered updates on progress with the Crew Dragon spacecraft the company is building for NASA. The

new information suggests that Musk is now prioritizing the program to ready Dragon to fly astronauts Doug Hurley and Bob Behnken to the International Space Station. NASA is also negotiating with SpaceX about extending the duration of this test flight, Spaceflight Now reports.

Hardware moving along ... The hardware for an in-flight abort test is already in Florida, ready for a mission in late November or early December. Additionally, Musk said hardware for the Demo-2 crew flight should arrive there in about 10 weeks, around the same time the company completes tests to ensure its readiness. At that point, the ball would move into NASA's court in terms of paperwork and approvals. (submitted by George Moromisato)

Boeing targets early November for pad abort test. The company expects to carry out a pad abort test for its CST-100 Starliner commercial crew vehicle in early November, followed by an uncrewed orbital flight test in mid-December. During a panel session of the International Symposium for Personal and Commercial Spaceflight, Commercial Crew VP John Mulholland said Boeing was targeting a December 17 launch of its Starliner vehicle on a United Launch Alliance Atlas 5 from Cape Canaveral.

A few "discoveries" ... The orbital test flight was originally due to launch this summer but has since been delayed several times. Boeing has not provided technical reasons for the delay, but this week Mulholland said, "There were a few little final discoveries that you only get on those final integrated tests." It will be a big step forward for Boeing if the company can actually fly some commercial crew hardware in 2019.

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your inbox.

Soyuz selling rideshare missions. Kepler Communications said it has secured launch slots for its first two fully commercial satellites on a Russian Soyuz rocket. Kepler will launch the two six-unit cubesats in mid-2020, SpaceNews reports. Kepler arranged the launch through Innovative Space Logistics, the Dutch launch broker that arranged for Keplers first two prototypes to launch in 2018 on a Chinese Long March 11 and Indian PSLV.

Rideshare race heats up, too ... One of the intriguing plot lines in the smallsat launch race is not only the development of new dedicated rockets but also efforts by SpaceX, Chinese companies, and Russia to re-position their boosters as viable options for rideshare missions. All of this is good news for companies seeking to put small satellites into space, of course. (submitted by Ken the Bin)

SpaceX rideshare missions to launch on time. While we're on the topic of rideshare missions, it's also worth noting that SpaceX has instituted an on-time launch policy. The company won't stop mission timelines to fill empty space or wait for late smallsat operators, SpaceNews reports. "We're going to fly even if it's not full," Tom Ochinero, vice president of commercial sales at SpaceX, said at the Satellite Innovation 2019 conference. "We are just going to set it up so that the ride is a reliable thing that people can count on."

Something like herding cats ... Ochinero said smallsat aggregators (a role SpaceX aims to play) face a challenge akin to "herding cats" when trying to get several customers all ready at the same time. "It's a tough place for an aggregator to be in, [and] it's a tough place for the end customer to be in," he said. "That's why we're taking the risk." SpaceX's first self-managed rideshare flight, a Falcon 9 mission to Sun-synchronous orbit, is scheduled for March. After that, SpaceX intends to launch dedicated rideshare missions to Sun-synchronous or polar orbits every quarter. (submitted by Ken

the Bin)

Falcon 9 to reopen polar corridor from Florida. When SpaceX launches the SAOCCOM 1B satellite into a polar orbit later this year, it will do so from Florida. According to reporter Michael Baylor, this will be the first use of the southern polar corridor from Cape Canaveral since 1960.

Cuba flyover ... It's not clear why SpaceX chose to launch this mission from Florida (SAOCCOM 1A flew from Vandenberg Air Force Base), but as the satellite weighs just three tons, the Falcon 9 rocket clearly has more than enough delta-V for in-flight maneuvers. After launching, the rocket will make a dogleg around Miami in Southern Florida but will overfly Cuba. (submitted by danneely)

NASA has plenty of rockets to choose from for Artemis. Last week, NASA held an "industry day" for companies hoping to win lunar lander contracts from the government as part of its Artemis program. The lander program asks a lot of the US aerospace industry in terms of technology development and production in a short period of time. Yet one of the biggest and most immediate questions each potential bidder will have to answer involves launch, Ars reports. How will each company get its lander hardware to lunar orbit?

Assessing five boosters ... There are also as many as five potential choices for lunar-lander contractors—Falcon Heavy, Vulcan-Centaur, New Glenn, Space Launch System (SLS), and Starship Super Heavy. Of those five, only the Falcon Heavy is a sure thing. It also has the lowest cost and capability to deliver more mass than most. But in the world of space politics, that may not count for much. The article provides an overview of each rocket.

Starship launch pad construction moving ahead. The construction of a new Starship launch and landing facility at Pad 39A is in full swing as heavy equipment lays the foundations at the Kennedy Space Center pad complex, NASA Spaceflight.com reports. Built alongside the 39A ramp, a new launch mount will be installed for what will be the maiden launch of SpaceX's Starship Mk2 prototype rocket. The facility also includes a landing pad that will be eventually used for returning vehicles.

A brisk pace ... The location of the new pad will avoid impacts to the ongoing use of 39A for Falcon 9 and Falcon Heavy launches. SpaceX has said it will launch vehicles from both its own spaceport in Boca Chica, Texas, as well as the shared Eastern Range in Florida. It is pretty impressive to see a company moving aggressively toward developing launch sites in two states while building separate vehicles in each location. (submitted by Platykurtic)

Next three launches

Oct. 11: Pegasus XL | ICON | Skid Strip, Cape Canaveral Air Force Station | 01:30 UTC

Oct. 14: Electron | Astro Digital | Mahia Peninsula, New Zealand | 23:00 UTC

Nov. 2: Antares | NG-12 ISS supply mission | Wallops Island, Virginia | 13:59 UTC

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