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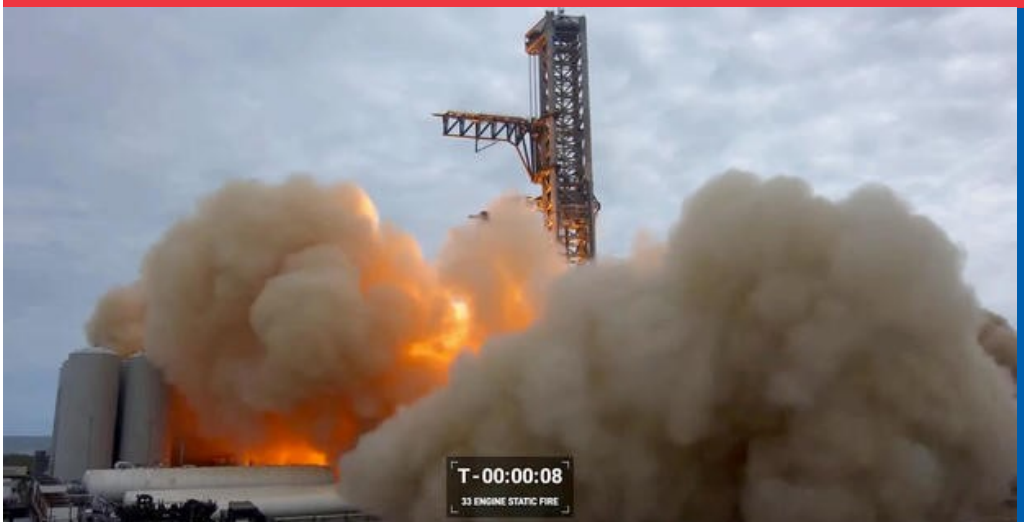

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SpaceX Test Fires Powerful Super Heavy Booster in Prelude to Maiden Launch

SpaceX engineers in Texas cranked up the world's most powerful rocket Thursday, firing 31 methane-burning Raptor engines in the company's gargantuan Super Heavy booster for a seven-second test run to help clear the way for an unpiloted maiden flight as early as next month.

Capable of generating up to 16.5 million pounds of thrust — twice the power of NASA's Space Launch System moon rocket — the Raptors at the base of the Super Heavy first stage roared to life at 4:14 p.m. EST, shattering the afternoon calm at SpaceX's Boca Chica, Texas, test facility.

Held firmly to its launch mount, the 230-foot-tall, 30-foot-wide Super Heavy was enveloped in a churning cloud of orange exhaust as the engines generated a torrent of incandescent fire and a deafening roar before shutting down about seven seconds after ignition.

The rocket was equipped with 33 Raptor engines, but SpaceX founder Elon Musk tweeted that engineers disabled one engine just before ignition and "1 stopped itself, so 31 engines fired overall." "But still enough engines to reach orbit!" he added. For actual flights, the rocket will be made up of the Super Heavy first stage and a 160-foot-tall second stage — known as the Starship — that will use a half-dozen methane-oxygen Raptor engines. Both stages are fully reusable.

Assuming no major problems are found when engineers review data from Thursday's test, and assuming approval of a launch license from the Federal Aviation Administration, SpaceX could be ready to launch the first Super Heavy-Starship sometime next month, or shortly thereafter.

"It's really the final ground test that we can do before we light 'em up and go," SpaceX President Gwynne Shotwell, quoted by Space News, said during an FAA conference Wednesday. "That first flight test is going to be really exciting. It's going to happen in the next month or so." The Super Heavy-Starship is a critical element in SpaceX's long-term plans, as well as NASA's Artemis moon program.

The California rocket builder has a grandiose strategy for using the Starship to launch thousands of Starlink internet satellites, as well as commercial payloads and private astronauts on flights to low-Earth orbit, the moon and beyond. NASA's Artemis program also relies on the Starship. SpaceX holds a $2.9 billion contract to build a variant of the Starship that will serve as NASA's lunar lander, carrying astronauts to the surface of the moon and back to orbit.

The architecture will require multiple launches of Super Heavy-Starship tankers to deliver propellants to robotically refuel the lunar lander before it heads for the moon. NASA is holding out hope for a moon landing in the 2025-26 timeframe, but that assumes the Super Heavy-Starship is operational, with at least one unpiloted moon landing under its belt. "We will go for a test flight, and we will learn from the test flight and we will do more test flights," Space News quoted Shotwell. "The real goal is to not blow up the launch pad. That is success." Read More. Watch the Video!

Nickel/Cobalt & Stainless-Steel Flat Rolled Surcharges

	Dec	Jan	Feb	Mar	Apr	May
15-5	1.0176	1.1326	1.1856	1.2015	*	*
17-4	1.0321	1.148	1.2011	1.2168	*	*
17-7	1.1528	1.3023	1.3454	1.3272	*	*
201	0.8539	0.9422	0.968	0.9618	*	*
301 7.0%	1.1225	1.268	1.3099	1.2923	*	*
302/304/304L	1.2452	1.4096	1.4562	1.4342	*	*
304-8.5%	1.3002	1.474	1.5231	1.4991	*	*
305	1.6914	1.9319	1.9977	1.9593	*	*
309	1.7365	1.9765	2.0414	2.0026	*	*
310	2.5319	2.9047	3.0029	2.9352	*	*
316/316L	1.8226	2.1115	2.3468	2.4610	*	*
321	1.3484	1.5304	1.5841	1.5565	*	*
347	1.6518	1.8353	1.8868	1.8607	*	*
409/409 Mod	0.2774	0.2894	0.3007	0.3111	*	*
410/410S	0.2819	0.2951	0.3046	0.3162	*	*
430	0.3399	0.3525	0.3609	0.3719	*	*
439	0.3609	0.3713	0.3822	0.3908	*	*
263	10.7724	10.9832	10.8442	11.7846	13.2813	12.3785
276	9.5601	10.1487	10.0837	11.153	13.5698	14.5412
A286	3.1578	3.194	3.0092	3.4243	4.0143	4.0365
600	7.6239	7.8565	7.4646	8.7808	10.2636	10.0981
601	6.3546	6.4998	6.1684	7.2046	8.3839	8.2504
617	10.019	10.3713	10.2334	11.3131	13.1396	12.9453
625	9.8369	10.2096	10.0402	11.1493	13.0263	13.4647
718	8.8356	9.0313	8.7834	9.713	11.0007	11.0906
X-750	8.0417	8.2187	7.8343	9.0694	10.4613	10.3044
800	3.5491	3.5905	3.3695	3.8869	4.5042	4.4588
825	5.0611	5.1995	5.0087	5.6952	6.7372	6.8800
HX	6.8404	7.1842	7.0661	7.9429	9.6011	10.0649
188	14.6262	14.555	14.287	14.5401	14.9566	12.1294
L-605	15.6932	15.5614	15.3483	15.396	15.5962	12.1584

*Surcharge currently not available

Nickel/Cobalt & Stainless-Steel Bar Surcharges

	Jan	Feb	Mar	Apr	May
316LS/316LVM	3.59	3.74	3.77	*	*
Custom 455	2.18	2.02	1.94	*	*
Custom 465	3.18	2.91	2.88	*	*
Custom 630	1.41	1.43	1.38	*	*
CCM	17.72	14.34	12.34	*	*
625	14.44	14.37	1.45	*	*
718	11.33	10.87	10.71	*	*
718CR	11.33	10.87	10.71	*	*
A286	5.83	5.45	5.30	*	*
A2861	5.83	5.45	5.30	*	*
A2862	5.83	5.45	5.30	*	*
A2867	5.83	5.45	5.30	*	*
A286R1	5.83	5.45	5.30	*	*
A286SH	5.83	5.45	5.30	*	*
Wasp6	14.58	13.56	12.82	*	*
L605	16.76	13.81	12.10	*	*
321	2.37	2.35	2.25	*	*
347	2.37	2.35	2.24	*	*
Greek Ascaloy	1.45	1.47	1.49	*	*

Titanium Surcharges

Form	Grade	Surcharge
TISH	6AL4V	5.56
TIPL	6AL4V	3.71
TIPL	6AL4VE	4.08
TIBR	6AL4V	7.50
TIBR	6AL4VE	4.45
TICO	GR 2	8.33
TICO	GR 3	8.33
TICO	GR 4	8.33
TISH	GR 2	8.33
TISH	GR 3	8.33
TISH	GR 4	8.33

Blue Origin Wins First NASA Business for New Glenn

Blue Origin has won its first NASA award for its New Glenn rocket, with the agency selecting the large rocket to launch a pair of Martian smallsats.

NASA announced Feb. 9 it selected New Glenn for the launch of the two Escape and Plasma Acceleration and Dynamics Explorers (ESCAPADE) spacecraft. The rocket will launch ESCAPADE in late 2024, with the spacecraft entering orbit around Mars 11 months later.

The award, a task order under NASA's Venture-Class Acquisition of Dedicated and Rideshare (VADR) contract, is the first NASA has issued for New Glenn, the large rocket Blue Origin has been working on for several years but has yet to launch. Blue Origin has previously won business from several commercial customers, including Amazon, which awarded the company a contract last April for 12 launches of Project Kuiper satellites, with an option for 15 more.

"ESCAPADE follows a long tradition of NASA Mars science and exploration missions, and we're thrilled NASA's Launch Services Program has selected New Glenn to launch the instruments that will study Mars's magnetosphere," said Jarrett Jones, senior vice president for New Glenn at Blue Origin, in a company statement.

Neither NASA nor Blue Origin provided additional details about the award. The company did not respond to questions about the award, including whether the launch would be a dedicated mission or if the ESCAPADE spacecraft will fly as rideshare payloads on another mission. Each ESCAPADE spacecraft weighs about 120 kilograms, excluding propellant, according to a 2022 conference paper about the mission. That suggests that New Glenn, designed to place up to 45 metric tons into low Earth orbit, is significantly oversized to launch ESCAPADE as a dedicated mission.

The company also did not disclose the value of the launch award. In another VADR award in November to Rocket Lab, for the launch of four TROPICS cubesats designed to monitor tropical weather systems, NASA declined to disclose the contract value because VADR task orders "are competed in a closed environment and as such are considered proprietary." Government procurement databases later listed the value of the award at $12.99 million, with about $2.6 million obligated to date.

According to the same government procurement database Feb. 10, the Blue Origin award for launching ESCAPADE is valued at $20 million, with $6 million obligated to date.

NASA selected ESCAPADE in 2019 as one of three missions in its Small Innovative Missions for Planetary Exploration (SIMPLEx) program, cost-capped at $55 million each. NASA envisioned launching all three as rideshares on other missions, with ESCAPADE and the Janus asteroid mission originally manifested as secondary payloads on the launch of the Psyche asteroid mission, while the Lunar Trailblazer mission would share a launch with the IMAP space science mission.

However, NASA removed ESCAPADE from the Psyche launch in 2020 after concluding that a change in that mission's trajectory, linked to a change in launch vehicles from Falcon 9 to Falcon Heavy, would not allow ESCAPADE to go into Mars orbit as originally designed.

That put the ESCAPADE mission in jeopardy. In 2021, Rocket Lab announced it would develop redesigned versions of the spacecraft for launch in 2024, and the mission passed a review later that year allowing it to proceed into full-scale development. Read the full article here.

Relativity Space Sets Date for Terran 1 Launch

Relativity Space announced Feb. 22 it will attempt the first launch of its Terran 1 rocket as soon as March 8 after securing a launch license and skipping a planned final test.

The company announced it received a Federal Aviation Administration launch license for its first Terran 1 mission. With the license in hand, the company says it is targeting a launch of the rocket March 8 between 1 and 4 p.m. Eastern from Launch Complex 16 at Cape Canaveral Space Force Station in Florida.

The mission, called "Good Luck, Have Fun" by the company, is a test flight of the rocket. While Terran 1 is designed to place up to 1,250 kilograms into low Earth orbit, the inaugural launch is not carrying any customer payloads.

The license comes after a series of tests of both stages of the rocket, manufactured largely using 3D printing. Relativity had planned to cap off that test campaign by firing the first-stage engines of the full vehicle on the pad. The FAA license for the launch included a "stage one hotfire" as part of the pre-launch operations covered by the license.

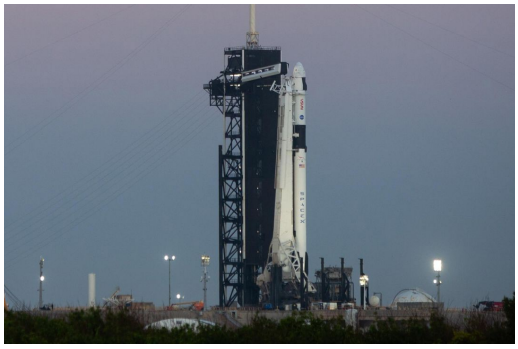
However, a company spokesperson told SpaceNews that Relativity had decided not to conduct that static-fire test. The overall test campaign had "burned down risk significantly" and gave the company confidence in proceeding with a launch without another hotfire of the first stage. The spokesperson added the company had to balance the risk of proceeding with the launch and conducting more tests that add wear and tear on the vehicle, and that the company had decided to accept the higher risk of an abort on its first launch attempt.

Terran 1, while designed to serve the small satellite market, is also a technology pathfinder for the larger, fully reusable Terran R rocket that Relativity is also developing. The company says it has a launch backlog worth more than $1.2 billion for that vehicle, including an agreement last June with OneWeb to launch some of that company's second-generation satellites.

Tim Ellis, chief executive and co-founder of Relativity, tweeted Feb. 22 that he recalled that his mentor when starting up the company, technology entrepreneur Sam Altman, "told us we were absolutely crazy for trying to simultaneously invent a brand new manufacturing technology and an orbital rocket, which is already super hard."

"Now we are on the launch pad almost ready to go with the world's first 3D printed rocket," he continued. "It's been a truly wild ride to get to this point, and certainly way harder than I ever imagined going into it – but all the feels from me and our team as we embark on this historic launch." Read the Article here.

SpaceX, NASA Delay Crew-6 Astronaut Launch to February 27



SpaceX and NASA have called off an astronaut launch to the International Space Station after an issue with the rocket's ground system was detected.

With about two minutes left on the countdown clock, the launch was called off because of a problem related to the TEA-TEB ignition fluid, which is used to ignite the SpaceX Falcon 9's rocket engines at liftoff.

The decision to wave off the launch was made "out of an abundance of caution," said Kate Tice, a SpaceX systems engineer, in commentary on Monday's webcast.

The four astronauts, who were strapped into their Crew Dragon capsule atop the rocket in the hours leading up to launch, disembarked from the spacecraft after waiting for the 230-foot-tall (70-meter) rocket to be drained of its fuel. They'll stay on site at Kennedy Space Center until the next launch attempt. NASA said it would now look to launch the SpaceX Crew-6 mission at 12:34 a.m. EST Thursday, March 2 "pending resolution of the technical issue preventing Monday's launch."

The agency said it would skip a launch opportunity on Tuesday because of an unfavorable weather forecast."I'm proud of the NASA and SpaceX teams' focus and dedication to keeping Crew-6 safe," NASA's Administrator Bill Nelson said in a blog post. "Human spaceflight is an inherently risky endeavor and, as always, we will fly when we are ready."

The SpaceX Falcon 9 rocket and Crew Dragon capsule were slated to lift off from NASA's Kennedy Space Center in Cape Canaveral, Florida, at 1:45 a.m. ET Monday. But the clock was stopped by engineers that oversee the ground systems with less than three minutes left. This mission is expected to mark the seventh astronaut flight SpaceX has carried out on NASA's behalf since 2020.

The Crew-6 team that will launch on the SpaceX capsule include NASA astronauts Stephen Bowen, a veteran of three space shuttle missions, and first-time flier Warren Hoburg, as well as Sultan Alneyadi, who will be the second astronaut from the UAE ever to travel to space, and Russian cosmonaut Andrey Fedyaev. Once Bowen, Hoburg, Fedyaev and Alneyadi are on board the ISS, they'll work to take over operations from the SpaceX Crew-5 astronauts who arrived at the space station in October 2022. They're expected to spend up to six months on board the orbiting laboratory, carrying out science experiments and maintaining the two-decade-old station. The mission comes as the astronauts currently on the ISS have been grappling with a separate transportation issue. Read the full article here.

UPM Focus: UPM Visits the Kennedy Space Center!

United Performance Metals serves a number of industries, and we are especially proud to service players in the space industry. Helping pioneers reach their goal of exploring the final frontier is one of UPM's core missions. By providing key alloys and materials to leaders in innovation, we are dedicated to this goal just as much as these innovators.

Because of our dedication to the space industry, United Performance Metals visited the Kennedy Space Center as part of the company-wide kick-off meeting for 2023. UPM's time at the Kennedy Space Center began with a tour of the Apollo/Saturn V Center, which houses countless artifacts, including one of the three Saturn V rockets that actually remains in the United States. Nearly half a million people worked to create the Saturn V rocket and the UPM team was able to marvel at the rocket's monumental size and significance.

Also within the Apollo/Saturn V Center were artifacts and replications of artifacts from some of the original moon landing missions. Several UPM team members were able to touch a "moon rock". The "moon rock" felt "slimy" according to some. The Apollo/Saturn V center featured a viewing area where visitors could watch launches of spacecraft at other launch bases in the surrounding area.

Following the visit to the Apollo/Saturn V Center, UPM was taken back to the main museum hall, where the Space Shuttle Atlantis is housed. The Space Shuttle Atlantis is arguably one of the most recognizable spacecraft ever created and flew on over 30 missions into outer space. The sheer size of the vehicle made many jaws drop in awe. Liliana Vlk, from UPM's Chicago office, stated that the experience at the Kennedy Space Center "It made me feel like a kid again, when rockets and spaceships are what you dream of. I was blown away by it." The innovative pieces of equipment and the spacecraft featured at the KSC demonstrated to UPM how the company plays a role in the most cutting-edge technology in the world. Team members remarked that they were able to recognize some of the products we stock in a number of the displays.

The end of UPM's visit to the Kennedy Space Center included the recognition of our 2022 Pinnacle Award Winners. The 2022 winners were Ron Muenchow, Kyle Lunsford, Michael Binegar, Adam Bland, and Jeremy Pearson. Throughout 2022, these gentlemen embodied the spirit of UPM. For more information about UPM's role in the space industry, contact marketing@upmet.com.