



## Blue Origin launches second crewed New Shepard mission

by Jeff Foust — October 13, 2021



Blue Origin's New Shepard lifts off Oct. 13 on the NS-18 mission, the second flight of the vehicle to carry people.  
Credit: Blue Origin webcast

It's HUNTSVILLE, Ala. — Blue Origin launched Star Trek actor William Shatner and three others into space on a brief suborbital flight Oct. 13, the second crewed flight of the company's New Shepard vehicle.

New Shepard lifted off from the company's Launch Site One in West Texas at 10:49 a.m. Eastern. The vehicle reached an estimated peak altitude of 107 kilometers before the crew capsule, RSS First Step, landed 10 minutes and 15 seconds after liftoff. The booster landed under rocket

power about three minutes earlier.

The vehicle carried four people, headlined by Shatner, best known for his role as James T. Kirk on the original Star Trek television series and later movies. At 90, Shatner is now the oldest person to fly to space, breaking the record set by 82-year-old Wally Funk on the first crewed New Shepard flight July 20. Shatner was exuberant after his flight, offering a long description of his experience to Blue Origin founder Jeff Bezos during the company's webcast. "I hope I never recover from this. I hope I maintain what I feel now," he said. "Everybody in the world needs to do this."

The flight was the fifth New Shepard flight this year, including three payload-only flights. That is the greatest number of flights of the suborbital vehicle the company has performed in a single year.

Full story <https://spacenews.com/blue-origin-launches-second-crewed-new-shepard-mission/>

Related Video interview (6:29)

<https://www.bing.com/videos/search?q=++William+Shatner+++into+space+&&view=detail&mid=8A>

### Quote of the Month

"I think we are at the dawn of a new era in commercial space exploration."

Author: Elon Musk

## **Oklahoma Space Alliance Update**

November 13 , 2021

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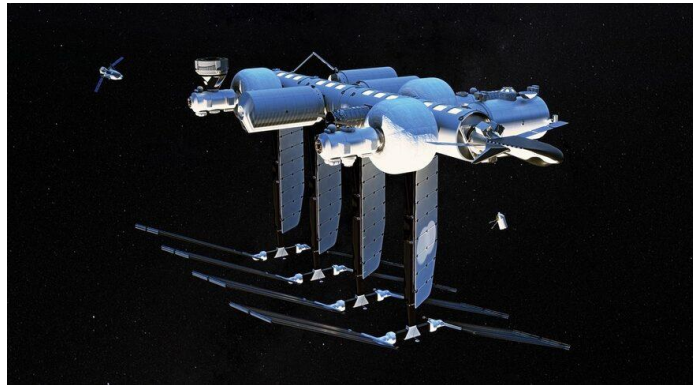
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## **Blue Origin and Sierra Space announce plans for commercial space station**



DUBAI, U.A.E. — An industry group led by Blue Origin and Sierra Space, and including several other companies and organizations, announced plans Oct. 25 to cooperate on the development of a commercial space station.

In a presentation associated with the 72nd International Astronautical Congress here, the industry consortium announced its intent to develop Orbital Reef, a modular space station that would be ready to host crews and payloads in the latter half of the 2020s, allowing for a transition from the International Space Station before its projected retirement at the end of the decade.

Under the partnership, Blue Origin will develop large-diameter core modules and utility systems, as well as provide launch services using its New Glenn rocket under development. Sierra Space, as “principal partner” on the effort, will contribute an inflatable module design called LIFE and its Dream Chaser cargo spaceplane, with a crewed version also planned.

Full Story: <https://spacenews.com/blue-origin-and-sierra-space-announce-plans-for-commercial-space-station/>

Video Orbital Reef (3:57 ) [Announcing Orbital Reef - Your Address in Orbit - YouTube](#)

# Table of Contents

## Contents

Blue Origin launches second crewed New Shepard mission .....	1
Blue Origin and Sierra Space announce plans for commercial space station .....	2
Table of Contents.....	3
Nanoracks and Lockheed Martin partner on commercial space station project .....	3
After years of futility, NASA turns to private sector for spacesuit help.....	5
<b>Boeing Deepens Probe Into Astronaut Capsule Woes, Prompting More Delays</b> .....	6
Errant Russian spacecraft thruster firing tilts space station by accident again .....	7
<b>Soyuz returns cosmonauts and film crew to Earth</b> .....	7
<b>Astronaut makes zero-g tacos with 1st chile peppers grown in space. They look delicious.</b> ...	8
By Elizabeth Howell November 1, 2021.....	8
<b>Samuel Adams brews 'Space Craft' beer with Inspiration4-flown hops</b> .....	9
Disabled 'astronauts-in-training' to fly weightlessly with Zero-G .....	10
Meteorite crash-lands in woman's bed in Canada.....	12
Shenzhou-13 heads for space station after reaching orbit.....	12
A Long March 2F lifted off from the Jiuquan Satellite Launch Center in the Gobi Desert at 12:23 Eastern Oct. 15. The rocket, with four side boosters, two stages and a launch escape system, rose from the LC43/91 launch complex into the black skies above Jiuquan after midnight local time. ....	12
Poland signs Artemis Accords.....	13
China's hypersonic vehicle test a 'significant demonstration' of space technology .....	14
Countdown to Elon Musk's Satellite Internet in Greece – Joint Ministerial Decision signed .....	15
Russia has reasons to fear Elon Musk's Starlink .....	16
Space Warfare .....	16
<b>That's All Folks</b> .....	16

## Nanoracks and Lockheed Martin partner on commercial space station project

by [Jeff Foust](#) — October 21, 2021

WASHINGTON — Nanoracks, its majority owner Voyager Space and Lockheed Martin, will collaborate on the development of a commercial space station as others in industry warn of a potential space station gap.



Nanoracks said Oct. 21 that it was partnering with Lockheed Martin and Voyager Space on a commercial space station called Starlab. Nanoracks will be the prime contractor with Voyager handling strategy and investment and Lockheed serving as the manufacturer and technical integrator.

Starlab would consist of a docking node with an inflatable module attached to one side and a spacecraft bus, providing power and propulsion, attached to the other side. Starlab will

Nanoracks, Voyager Space and Lockheed Martin will collaborate on development of Starlab, a commercial space station that could launch as soon as 2027. Credit:

have a volume of 340 cubic meters, about three-eighths that of the International Space Station, and generate 60 kilowatts of power. Starlab will be equipped with a robotic arm and “state-of-the-art” lab, and be able to host four astronauts at a time.

Full Story <https://spacenews.com/nanoracks-and-lockheed-martin-partner-on-commercial-space-station-project/>

Video (2:08) [https://www.youtube.com/watch?v=\\_14-fIjoDe0&t=27s](https://www.youtube.com/watch?v=_14-fIjoDe0&t=27s)

## After years of futility, NASA turns to private sector for spacesuit help



This week NASA's Johnson Space Center issued a call to industry for new spacesuits. The space agency's existing suits are decades old, and new ones are needed both for the International Space Station as well as Artemis missions to the lunar surface later this decade.

### **A brief history of futility**

In August NASA Inspector General Paul Martin published an exhaustive review of NASA's efforts to develop a replacement for its Extravehicular Mobility Units, or EMUs. This is both the spacesuit and hardware that connects the suit to a spacecraft. The EMUs currently being used on orbit

were designed 45 years ago for the space shuttle program, and they are in a constant state of repair.

NASA has undertaken several different programs over the previous 14 years, generally led by a NASA field center, to develop a new generation of spacesuits. NASA has spent a total of \$420 million during that time on various spacesuit efforts, but this has yielded limited results. After all of this work, any new spacesuits will not be ready for a Moon landing in 2024.

Until earlier this year, NASA's existing plan was to build six "xEMU" suits with contractor and vendor support and then issue a contract for the production of additional suits. (These were the "Artemis suits" that appeared at a gaudy NASA headquarters event in 2019, which, in hindsight, was more style than substance.) But all of that changed in April, when NASA announced that it was considering simply buying spacesuits from private industry.

And now, with the new industry request, NASA has done that. Bidders can use the technology NASA developed for xEMU in its proposals, or they can use their own designs, the document states. The suits must be able to meet a variety of requirements, including up to six spacewalks on the lunar surface during initial Artemis Moon missions. They must also be made of materials such that less than 100 grams of lunar regolith is brought back into the "cabin environment" after each spacewalk on the Moon. NASA plans to award a contract by next April.

*Eric Berger is the senior space editor at Ars Technica, covering everything from astronomy to private space to wonky NASA policy, and author of the book Liftoff, about the rise of SpaceX. ERIC BERGER - 10/1/2021*

Full Story : <https://arstechnica.com/science/2021/10/after-years-of-futility-nasa-turns-to-private-sector-for-spacesuit-help/>

Also. Commercial Promotion for Next Generation Space Suit by Collins Aerospace

Video: ( 3:16 ) <https://www.youtube.com/watch?v=rUTlPLklgg8>

Building NASA's NEXT Generation Spacesuits

Video: ( 1:19 ) <https://www.youtube.com/watch?v=ug-FHsOYP5Y>

## Boeing Deepens Probe Into Astronaut Capsule Woes, Prompting More Delays



The Boeing Starliner capsule at Cape Canaveral Space Force Station in Florida in July. Credit...John Grant/NASA/Boeing, via Agence France-Presse — Getty Images

The Starliner capsule for NASA crews is now unlikely to have another orbital flight test until the middle of next year.

Boeing's second chance to test launch its troubled astronaut capsule to the International Space Station was delayed again, possibly until the middle of 2022, as [NASA](#) and the aerospace giant go to new lengths to investigate problems with the spacecraft's fuel valves.

The postponement adds to the woes of Boeing's Starliner spacecraft, a striking contrast with SpaceX, the private company founded by Elon Musk. Its passenger spacecraft, Crew Dragon, has lofted crews to orbit four times in the past two years,

with a fifth scheduled on Halloween.

The [Starliner capsule came within hours of launching](#) to the space station on an Atlas 5 rocket in August, as part of a 10-day test mission without humans on board. The goal was to demonstrate that the spacecraft was safe enough to fly NASA astronauts. But some of Starliner's fuel valves, supplied by Aerojet Rocketdyne, a maker of rocket engines, didn't open as designed during last-minute launch preparations, prompting engineers to roll the rocket back into its tower and, eventually, the capsule back to its factory.

"We had no indication that there was going to be any problem with these valves," John Vollmer, the manager of Boeing's commercial crew operations, told reporters on Tuesday. The valves are part of an ornate network of plumbing in a detachable trunk called the "service module" that houses Starliner's

propulsion gear. The components worked during previous tests, including a trial of the spacecraft's emergency abort system in 2019, Mr. Vollmer added.

## **Errant Russian spacecraft thruster firing tilts space station by accident again**

Mike Wall , October 15, 2021

Unplanned thruster firings by a Russian spacecraft briefly knocked the International Space Station off-kilter today (Oct. 15), the second such incident in less than three months.

The spacecraft involved today was the Soyuz MS-18, which is scheduled to bring cosmonaut Oleg Novitskiy, film director Klim Shipenko and actor Yulia Peresild back to Earth early Sunday morning (Oct. 17). Russian flight controllers fired up the vehicle's thrusters at 5:02 a.m. EDT (0902 GMT) in a planned pre-departure test. Errant Russian spacecraft thruster firing tilts space station by accident again

"We think — and we haven't got confirmation — we think the thrusters stopped firing because they reached their prop[ellant] limit," NASA flight director Timothy Creamer told agency astronauts shortly after the thrusters shut down, according to The New York Times. "Moscow is checking into it and doing their data analysis."

The space station was also accidentally spun on July 29, when the thrusters of Russian's newly arrived Nauka module did some unplanned firing. That incident was even more extreme, rotating the orbiting lab by about 540 degrees.

Despite today's drama, the Soyuz MS-18 remains on track to return to Earth this weekend. The spacecraft will undock from the station on Saturday (Oct. 16) around 9:14 p.m. EDT (0114 GMT on Oct. 17) and will touch down on the steppes of Kazakhstan about 3.5 hours later. You can watch all the action here at Space.com, courtesy of NASA TV.

Full Story <https://www.space.com/russian-soyuz-thrusters-tilt-space-station-again>

Video Computer voice: ( 2:04 ) <https://www.youtube.com/watch?v=Zlwts8PaQQY>

## **Soyuz returns cosmonauts and film crew to Earth**

WASHINGTON — A Soyuz spacecraft carrying a cosmonaut and two spaceflight participants landed in Kazakhstan Oct. 17, nearly two days after that spacecraft caused the station to briefly lose attitude control.

The Soyuz MS-18 spacecraft undocked from the station's Nauka module at 9:14 p.m. Eastern Oct. 16. It reentered and landed southeast of Dzhezkazgan, Kazakhstan, at 12:35 a.m. Eastern Oct. 17.

On board the Soyuz was Roscosmos cosmonaut Oleg Novitskiy, returning from 191 days in space. Also on board were spaceflight participants Yulia Peresild and Klim Shipenko, [who flew to the station on the Soyuz MS-19 spacecraft that launched Oct. 5.](#)



Peresild and Shipenko were on the station to shoot scenes for a Russian movie called *Vyzov* or *Challenge*, directed by Shipenko and starring Peresild. Peresild plays a doctor who flies to the station to perform surgery on a cosmonaut, a role played by Novitskiy. Roscosmos provided few updates about their work during their 12 days on the station beyond that they

The New York Times

were carrying out filmmaking activities.

The third person on Soyuz MS-19, veteran Roscosmos cosmonaut Anton Shkaplerov, remained on the station with fellow cosmonaut Pyotr Dubrov and NASA astronaut Mark Vande Hei. Dubrov and Vande Hei flew to the station on Soyuz MS-18 with Novitskiy and will remain on the station until March 2022, spending nearly one year in space.

The Soyuz MS-18 spacecraft caused the station to lose attitude control for the second time in less than three months Oct. 15. The spacecraft fired its thrusters at 5:02 a.m. Eastern as a test before departing the station. However, the thrusters continued to fire “unexpectedly” after the end of the testing window, NASA said in a statement, resulting in a loss of attitude control of the station at 5:13 a.m. Eastern. Flight controllers were able to restore attitude control within 30 minutes.

“The crew was never in any danger,” NASA spokesman Rob Navias said on NASA TV Oct. 16 during a broadcast of activities leading up to the undocking. “Flight controllers are continuing to evaluate data on that brief attitude excursion due to the thruster firing. NASA and Roscosmos are collaborating to understand the root cause.”

Full Story: <https://spacenews.com/soyuz-returns-cosmonauts-and-film-crew-to-earth/>  
Video intermittent sound (3:43) <https://www.youtube.com/watch?v=6u8xL3hoxV4>

## **Astronaut makes zero-g tacos with 1st chile peppers grown in space. They look delicious.**

By [Elizabeth Howell](#) November 1, 2021



Some of humanity's first space-grown chile peppers have been consumed in orbit, taco-style.



NASA astronaut Megan McArthur, one of the seven crewmembers currently living and working at the [International Space Station](#) (ISS), created what she called "my best space tacos yet," using some of the newly harvested peppers, some fajita beef and rehydrated tomatoes (as fresh food can only last so long in space.)

The astronauts also got to eat some of the red and green peppers and perform a survey on their taste for future science work, McArthur said in the [Oct. 29 Twitter post](#). The [48 Hatch peppers](#) are part of a

new push by NASA to test out more food ahead of long-term missions to the moon and Mars.

Happily, the harvest is somewhat self-continuing as a few of the peppers produced flowers used to germinate another crop, NASA said in an Oct. 5 update of the project. The space station crew hand-pollinated some of the flowers to assist the future harvest, which may take place this month.

"Studies of fruit development in microgravity are limited, and NASA researchers have noted lower fruit development versus ground observations in this experiment for reasons that are not fully understood at this point," the agency said.

Full Story: <https://www.space.com/astronauts-eat-space-grown-chile-pepper-tacos>

## Samuel Adams brews 'Space Craft' beer with Inspiration4-flown hops

Samuel Adams is ready to toast the world's first "all-civilian" orbital spaceflight with a beer made using hops flown on the private mission.

The Boston-based brewery [has announced "Space Craft,"](#) its Inspiration4-inspired special release, which marks the brand's first use of "out-of-this-world" ingredients. The hops used to brew Space Craft [orbited Earth with the Inspiration4 crew](#) for three days in September, flying more than 360 miles high (585 km) — above the orbit of the International Space Station — on board a [SpaceX](#) Dragon spacecraft.



Inspiration4 commander Jared Isaacman (left) unpacks the flown hops used in Space Craft at the Samuel Adams Brewery in Boston. (Image credit: Samuel Adams)

Isaacman initially [shared the idea of flying hops on Inspiration4](#) in a post to Twitter about a month before he and his crewmates were set to launch. "Who wouldn't order a beer brewed with space hops?" he asked, soliciting brewers to respond "if interested." Samuel Adams replied and, in addition to receiving the space-flown hops to make Space Craft, was named the official beer of the mission. Samuel Adams is set to release Space Craft on Nov. 16 so that it coincides with the expected peak of the Leonid meteor shower. A four-pack of one pint (16 oz.) Space Craft cans is priced at \$22.33 — an homage to the length of time that the Inspiration4 crew was in space: 2 days, 23 hours and

3 minutes.

Initially offered for pre-sale on Give Them Beer, the online craft beer gift delivery service quickly sold out of its supply. Cans are still available for pick up from the Samuel Adams Brewery in Boston and the beer will be available on draft at both the brewery and Samuel Adams' downtown Boston taproom starting Nov. 16 and Nov. 17.

## Disabled 'astronauts-in-training' to fly weightlessly with Zero-G

Twelve disability ambassadors will fly weightlessly on Sunday (Oct. 17) as part of an initiative to advance disability inclusion in space.



[AstroAccess](#), the latest mission from the SciAccess Initiative, which aims to make STEM (science, technology, engineering and mathematics) more accessible, will fly a crew of 12 disability ambassadors on a weightless parabolic flight. The flight will take off on Sunday from Long Beach, California, aboard Zero Gravity Corporation's (Zero-G) "[G-Force One](#)" plane, which flies in a parabolic arc pattern that creates short periods of weightlessness in its cabin. The 12 ambassadors, who have mobility, vision and hearing disabilities, will test how accessible the flight environment is both during weightlessness and periods of high gravity. (During parabolic flights, periods of weightlessness happen between periods of high gravity). The ambassadors on the flight are a

varied lot, including scientists, veterans, engineers and artist.



On the flight, the team of ambassadors, known as the Flight 1 Ambassador Team, will not just experience weightlessness and periods of high gravity; they will also complete experiments and demonstrations. They will use their experience to see how the physical environment onboard spacecraft could be designed or modified to be accessible to spaceflyers regardless of disability, according to a statement from AstroAccess.

The tasks set out for the team include assessing the physical environment for accessibility, communicating safety procedures using multi-sensory methods and collecting data from demonstrations and experiments completed while weightless.

Full story <https://todayuknews.com/science/disabled-astronauts-in-training-complete-a-zero-gravity-flight-32000ft-above-earth/>

## Meteorite crash-lands in woman's bed in Canada



A woman in Canada narrowly missed being struck by a [meteorite](#) that crashed through her roof and landed on her pillow.

Ruth Hamilton, a resident of Golden, British Columbia, was asleep in her bed on the night of Oct. 3 when she was jolted awake by an explosive bang, as something plummeted through the roof and showered her with debris, Hamilton told [Victoria News](#) on Oct. 8. She jumped out of bed and turned on the light, discovering a rock lying nestled between her pillows, right next to the spot where her head had been moments earlier. The object was about the size of a fist and weighed about 2.8 pounds (1.3 kilograms), [The New York Times reported](#) on Thursday (Oct. 14).

Apart from being shaken up, Hamilton said she avoided any injuries, but plans to keep the rock. She said the insurance company has inspected the damage and now she's just focused on getting it fixed.

A hole in the ceiling is seen above a meteorite resting on a bed inside Ruth Hamilton's home. PHOTO BY RUTH HAMILTON / THE CANADIAN PRESS

Full Story <https://www.space.com/meteorite-near-miss-bedroom-canada>

## Shenzhou-13 heads for space station after reaching orbit

by [Andrew Jones](#) — October 15, 2021

HELSINKI — A second crew of three astronauts are heading for China's Tianhe space station module after the successful launch of the Shenzhou-13 mission Friday.

A Long March 2F lifted off from the Jiuquan Satellite Launch Center in the Gobi Desert at 12:23 Eastern Oct. 15. The rocket, with four side boosters, two stages and a launch escape system, rose from the LC43/91 launch complex into the black skies above Jiuquan after midnight local time.

Applause followed in mission control after each major launch event, culminating in Shenzhou-13 separating from the second stage, entering orbit and deploying its solar arrays.

Commander Zhai Zhigang and colleagues Wang Yaping and Ye Guangfu make up the crew of the three-module Shenzhou-13. The spacecraft is now due to attempt a radial rendezvous with Tianhe within the next eight hours and dock at the Tianhe module's nadir port.

The trio are expected to stay aboard the 16.6-meter-long, 4.2-meter-diameter Tianhe for six months, which would be China's longest by three months.

Major mission objectives include conducting two or three extravehicular activities, installing an adaptor to combine large and small robotic arms and carrying out a range of medicine and physics-related experiments.

Full story: <https://spacenews.com/shenzhou-13-heads-for-space-station-after-reaching-orbit/>  
Video (1:08) and story <https://www.space.com/china-shenzhou-13-astronauts-begin-space-station-work>

## Poland signs Artemis Accords

by **Jeff Foust** — October 27, 2021

DUBAI, U.A.E. — Poland has joined the U.S.-led Artemis Accords for space exploration, hoping to use the agreement as a means of enhancing space cooperation between the two nations.

In a ceremony during the 72nd International Astronautical Congress (IAC), Polish Space Agency (POLSA) President Grzegorz Wrochna signed the Accords, which outline best practices for safe and sustainable space exploration, with NASA Deputy Administrator Pam Melroy. Poland is now the 13th country to join the accords.

In brief comments at the ceremony, Wrochna said he saw the Artemis Accords as a first step toward greater cooperation with the United States. He noted that while Poland is a member of the European Space Agency, Polish space companies are looking to expand their business outside Europe.

“They want to reach for new markets, especially the U.S. market,” he said. “They want to participate in missions of other agencies, especially NASA. We would like to open the door for them, and I believe this is the first step.”

The United States announced the Artemis Accords in 2020, intending to outline high-level principles for space exploration, based largely on the Outer Space Treaty and other agreements, that it expected countries to follow if they wanted to cooperate on the Artemis lunar exploration program. Eight countries, including the U.S., signed the Accords at the IAC in 2020, followed subsequently by Ukraine, South Korea, New Zealand and Brazil.

Full Story <https://spacenews.com/poland-signs-artemis-accords/>  
Video (2:07) <https://www.youtube.com/watch?v=MEx6zt8H8>

# China's hypersonic vehicle test a 'significant demonstration' of space technology

Whether the Chinese tested a weapon or just a reusable space vehicle is impossible to know without seeing the test data, said an industry expert



Rendering of a Chinese DF-ZF hypersonic glide vehicle. Credit: Missile Defense Advocacy Alliance

WASHINGTON — China's [reported](#) tests of a hypersonic orbital glide vehicle have sparked alarm in the U.S. as it could further fuel an escalating arms race. The Chinese government [said this week](#) that these were routine space test [missions](#), not a demonstration of a new military weapon. One way or the other, experts said, these tests show China's notable advances in [reusable](#) space technology.

To be sure, a space vehicle that orbits the Earth, reenters the atmosphere at hypersonic speed and glides to its intended target area is not new technology, said Robert Bakos, principal and co-owner of Innoveering, a company that specializes in propulsion technology used in hypersonic vehicles.

“The U.S. had the Space Shuttle and we have the X-37B spaceplane which can be deemed a hypersonic system because when it returns from space, it's going a very high speeds,” he said.

What appears to be a new is the Chinese vehicle's capability to maneuver after reentry in ways that have not been seen before, Bakos said, adding that he has no direct knowledge of what exactly the Chinese tested and his comments are based on what was publicly reported.

If one is to believe the Chinese government's explanation that this was just a reusable space vehicle technology demonstration, “in and of itself that would be a very significant demonstration, not trivial by any means,” Bakos said. If China's vehicle after reentering “maneuvered in some way that a typical space vehicle does not, that would be alarming.” But he cautioned that whether or not this was a weapon or a nuclear-warhead delivery system being tested is impossible to know without seeing the test data.

“If you see a vehicle make a hard left turn at high speed, that's pretty interesting because it's hard to do that with a typical space vehicle,” Bakos said. “They're not designed aerodynamically to have that capability.”

## Implications for U.S. security

Bakos' take on the Chinese hypersonic vehicle test echoes what other experts have warned about not rushing to conclusions.

“This is no Sputnik moment — partly because it’s not entirely clear what was tested, but mostly because the threat of a Chinese nuclear attack on the United States isn’t remotely new,” wrote [James Acton](#), co-director of the nuclear policy program at the Carnegie Endowment for International Peace.

What all this means for the hypersonic arms race between the United States, Russia and China remains to be seen, Bakos said. The Pentagon has warned for years that China has developed hypersonic glide vehicles to arm its short-range ballistic missiles. A more advanced vehicle would be concerning, he said. “It’s the element of surprise that becomes destabilizing, unfortunately.”

A long-term concern for the United States is ensuring it has a viable industrial base to advance hypersonic propulsion and other key technologies it would need to stay ahead of rivals, Bakos

In anticipation of China and Russia deploying hypersonic missiles, the Pentagon is developing a network of space sensors in low Earth orbit to fill blind spots in the current U.S. antimissile defense system. DoD concluded that only sensors in low orbits can spot maneuvering missile threats accurately and early enough so they can be shot down. Compared to ballistic missiles, hypersonic glide vehicles are dimmer and harder to detect by U.S. early warning satellites in geostationary orbit 36,000 kilometers above Earth.

Full Story <https://spacenews.com/chinas-hypersonic-vehicle-test-a-significant-demonstration-of-space-technology/>

Comparison video (3:10) [https://www.youtube.com/watch?v=yiaktrUer\\_U](https://www.youtube.com/watch?v=yiaktrUer_U)

## Countdown to Elon Musk’s Satellite Internet in Greece – Joint Ministerial Decision signed

The way has opened for the operation of the satellite Internet of wide use in Greece with a joint ministerial decision signed by the Deputy Minister of Digital Government Thodoris Livanios and the Deputy Minister of Environment and Energy Nikos Tagaras, following a proposal by the National Telecommunications Committee.

It updates the special procedure for licensing the installation of standard antenna structures and introduces a new regulatory framework for the installation of standard antennas that meet specific technical safety standards.

The antennas described above will be used by companies to provide consumers with satellite Internet services, ensuring a stable connection at high speeds and low response times.

This decision is coming to resolve the last pending issues for the activation of Starlink’s satellite Internet, Elon Musk, in Greece.

The reason for the need to change the regulatory framework for this type of “satellite dishes” is that they may look like those of satellite TV, but they have one important difference: In addition to signal receivers, there are transmitters. The licensing of satellite dishes was in fact one of the key regulatory issues that had to be resolved before Musk’s company began shipping equipment boxes to our country. Story:

<https://en.protothema.gr/countdown-to-elon-musks-satellite-internet-in-greece-joint-ministerial-decision-signed/>

# Russia has reasons to fear Elon Musk's Starlink

Interesting video

Video (8:57) <https://www.youtube.com/watch?v=MXhRAhbfqTM>

## Space Warfare

Video Interview of George Friedman, owner and CEO of Geopolitical Futures on the importance of Space in future warfare.

Video: ( 17:13) <https://www.youtube.com/watch?v=Psz42TkcUrQ&t=421s>

## That's All Folks



Image: NASA