

# SPACE

## ADVENTURE GUIDE

### A Gateway to Space

From ancient petroglyphs depicting celestial events to the futuristic Spaceport America, New Mexico offers a galaxy of otherworldly adventures

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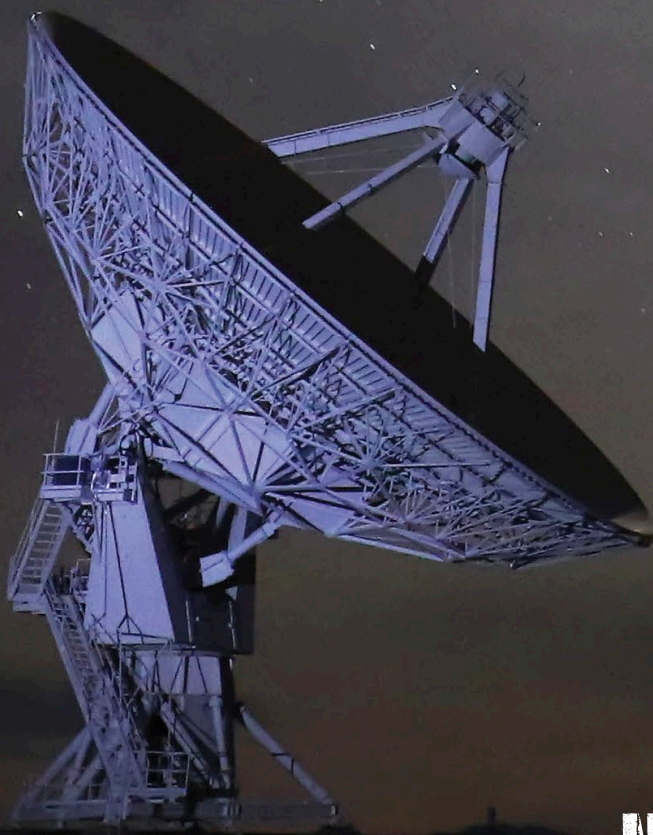
p. 8 Chart your odyssey along the Space Trail

  
As the home of Virgin Galactic, Spaceport America serves as New Mexico's launchpad for a new era of space travel

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Eyes to the Skies. [TRUE]



NEW MEXICO *True*

# The Future of Flight

Spaceport America serves as New Mexico's launchpad for a new era of adventure. And you don't have to be an astronaut to go.

BY ASHLEY M. BIGGERS

I was nearly late for my tour of Spaceport America—the place where a futuristic space age is dawning—because of a vestige of the Old West: cows. A trio of cattle blocked the two-lane county road outside Truth or Consequences, their placid faces expressing little desire to give way to a combustion engine.

A bovine blockade is par for the course in this stretch of desert, 26 miles east of T or C and 55 miles north of Las Cruces. But near the aptly named town of Upham, Spaceport America has quietly snuck into the history and record books as one of the top destinations for aerospace innovation in the country.

With their last hoof off the blacktop, I head to the tucked-wing form of the Gateway to Space, Spaceport America's public hub, whose earthen hues and undulating shape blend into its surrounds.

This region has long been a place for stargazers and epic travelers. Some 2,000 years ago, Jornada Mogollon people etched celestial phenomena into rock faces in what is now the Three Rivers Petroglyph Site, near Tularosa. Beginning in the 16th century, explorers traveled El Camino Real, the trading route connecting Mexico City to Santa Fe, which now skirts the spaceport's western edge.

Those travelers trekked across an inhospitable landscape, where yuccas outnumber people even today, to reach a destination unknown to them. Some 400 years later, future astronauts will trace this same route as the first leg of their journey into the final frontier.

**FOR AEROSPACE RESEARCHERS AND STARRY-EYED dreamers,** this remote location holds a certain appeal. Its setting, just over the San Andres Mountains from the U.S. Army's White Sands Missile Range, where the country's missile and space programs set important roots, clinched

it as a site for the world's first purpose-built spaceport (an airport for spaceships).

Consider its history: A rocket launched from White Sands Missile Range took the first image of Earth from space on October 24, 1946. That groundbreaking grainy black-and-white photo was one of the first milestones in the region's space adventures, which include supporting the International Space Station program and training astronauts for Apollo missions. Today, White Sands Missile Range's 6,000 square miles of restricted airspace remains an important testing ground—and that enviable umbrella extends over Spaceport America's 18,000 acres and its tenants.

The spaceport officially opened in 2011, with a big-name

celebrity tenant: British entrepreneur Richard Branson. His company Virgin Galactic, the world's first commercial "spaceline," promises to give customers a brief ride into space.

Walking up to the Gateway to Space, which doubles as the welcome center and Virgin Galactic's terminal, I follow the same path as future astronauts. They and their entourages will climb the Astronaut Walk and pass through



■ Spaceport America's futuristic architecture complements the vision of its most famous tenant, Richard Branson's Virgin Galactic.

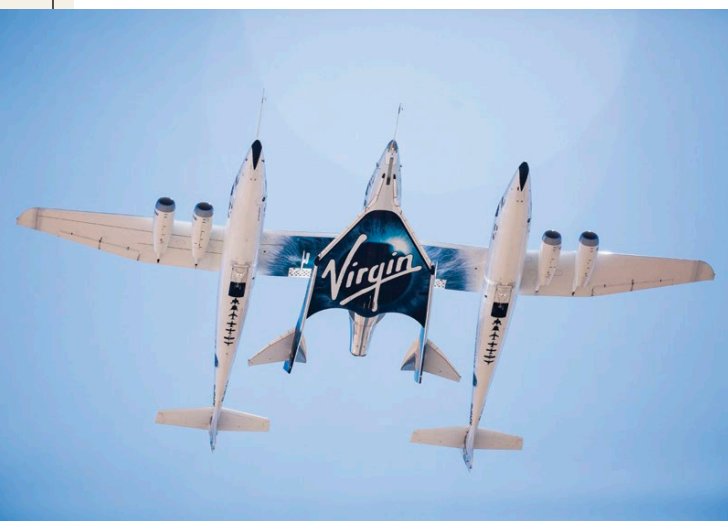
a set of patina metal doors. After crossing a sky bridge, they'll enter a three-story facility dedicated to their flights.

The main floor, called Gaia, uses earth tones and natural materials to create a grounding effect in its lounge and coffee bar. On the second floor, called Cirrus, Virgin Galactic's design director, Jeremy Brown, incorporated blues and whites to evoke the sky in an area dedicated to mission control and pilot use. The yet-to-be-revealed third floor will be for training astronauts.

When they arrive, possibly in 2021, the three days of training will include final fittings of their bespoke spacesuits, medical exams, and preflight briefings. "We want to get them into the headspace to enjoy every single second of



## SPACEPORT



■ **FROM ABOVE:**  
The VSS *Unity*  
glides home after its  
second supersonic  
flight. Elegantly  
designed, Virgin  
Galactic's carrier  
aircraft VMS *Eve* lifts  
*Unity* to the sky.

G-Shock simulator to get a sense of the g-forces astronauts encounter in flight.

As I step into the visitor center, fogged windows clear to reveal the football-stadium-size hangar and Virgin Galactic's space fleet, which includes the catamaran-like form of the WhiteKnightTwo carrier and

the metallic-winged SpaceShipTwo. The WhiteKnightTwo, known as VMS *Eve*, takes its name from Branson's mother, who was a flight attendant. Stephen Hawking dubbed SpaceShipTwo the VSS *Unity*. The ship's branding features a Galactic Girl pulling a banner with the image of one of Hawking's piercing blue eyes.

**VIRGIN GALACTIC'S RACE TO SPACE HAS OFTEN FELT** like a crawl as a galaxy's worth of safety issues have been worked out, so just these vehicles' presence in New Mexico marks a major milestone. (Virgin Galactic moved them from its Mojave, California, facility in February 2020.)

To achieve spaceflight, the WhiteKnightTwo completes a conventional takeoff from the 2.25-mile-long spaceway, climbing to 50,000 feet with SpaceShipTwo attached. Then SpaceShipTwo is released, firing a motor that pitches it into a near vertical climb and propels it at 3.5 times the speed of sound toward the inky dark of space.

the flight," says Aleanna Crane, head of communications for Virgin Galactic.

The founding 600 astronauts paid between \$200,000 and \$250,000 to spend a few minutes at zero gravity. Early investors included Tom Hanks, Angelina Jolie, Justin Bieber, and Lady Gaga. When Virgin Galactic begins selling tickets again—it hasn't since 2018—it expects prices to rise. Those of us who are there for just a visit can hang a left into the visitor center for earthbound experiences. For many, the tour highlight is being strapped into the

## PLAY SPACES

Spaceport America has two great choices for a base camp. Call ahead to ensure your destinations are open and ask about their COVID-19 protocols.

## TRUTH OR CONSEQUENCES

Spaceport's nearest neighbor, T or C sits 26 miles to the west. **Public tours**, when available, depart on Saturdays and Sundays from the visitor center, in one of the town's historic adobe buildings, where displays set the stage for a great outing (301 S. Foch St., 575-267-8888, [spaceportamerica.tour.com](http://spaceportamerica.tour.com)).

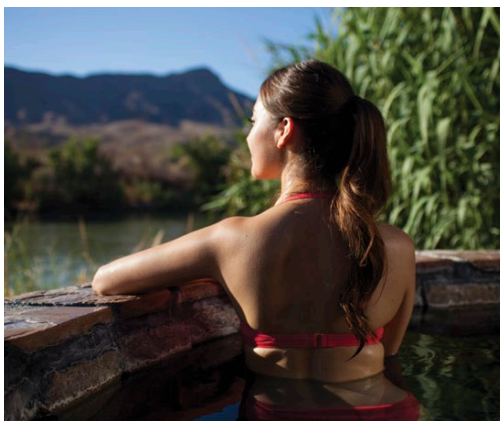
Space fans can continue the journey by booking a stay at the **Rocket Inn**, where rooms named Apollo, Jupiter, and Pluto lie behind the retro-lodge's brick facade, just outside of downtown (605 N. Date St., 575-894-2964, [rocketinn.net](http://rocketinn.net)).

T or C is also a hot-springs hamlet known for soothing soaks at an affordable price. Nearly a dozen hotels and bath-houses are clustered in the **Hot Springs Historic District** ([nmmag.us/torc-springs](http://nmmag.us/torc-springs)). **Riverbend Hot Springs** offers private tubs set along the bank of the Río Grande (100 Austin St., 575-894-7625, [riverbendhotsprings.com](http://riverbendhotsprings.com)).

For such a small town, T or C has an outsize number of high-profile names with property in the area. Media mogul Ted Turner (whose **Armendaris Ranch** marks the turn to Spaceport America, at Engle) joins Branson as a local property owner. Ted Turner Reserves' 17-room



**CLOCKWISE:**  
Sierra Grande Lodge & Spa, Farmers & Crafts Market of Las Cruces, Riverbend Hot Springs



**Sierra Grande Lodge & Spa** offers private soaks beneath the stars, on-site dining, and guided tours of the Armendaris and Ladder ranches (501 McAdoo St., 877-288-7637, [tedturnerreserves.com](http://tedturnerreserves.com)).

The description-defying Asian fusion cuisine at **Latitude 33** is a local favorite. Dishes such as the crispy orange chicken with pecans and edamame, and the BYO Impossible Burger (a vegan favorite to which you can add—ahem!—bacon), top the menu (304 S. Pershing St., 575-297-0844, on Facebook @latitude33torc).

## LAS CRUCES

Virgin Galactic's hub city is 55 miles south of Spaceport America. Around 100 of the company's staff and their families call Las Cruces home. **Public tours**,

when available, depart from here on Fridays (336 S. Main St., 575-267-8888, [spaceportamericatour.com](http://spaceportamericatour.com)).

Among the city's top activities is the Saturday and Wednesday **Farmers & Crafts Market of Las Cruces** ([farmersandcraftsmarketoflascruces.com](http://farmersandcraftsmarketoflascruces.com)). The market springs up along streets in the walkable downtown area, near the 1926 **Rio Grande Theatre**. When it has a full calendar, the restored two-story adobe theater hosts three to four events each week, from family movie nights to touring cello virtuosos (211 Main St., 575-541-2290, [riograndetheatre.org](http://riograndetheatre.org)).

The theater's restoration ushered in other downtown redevelopments, including the addition of a 1980s-style



arcade, **Rad Retrocade** (201 N. Main St., 575-556-9338, on Facebook @radretrocade).

Head to **Beck's Roasting House & Creamery** for third-wave coffee and micro-batch ice cream (try the java flavor), in the Mesquite Historic District (130 N. Mesquite St., 575-556-9850, [beckscoffeelc.com](http://beckscoffeelc.com)). In nearby Mesilla, **Dry Point Distillers** serves house-distilled vodka cocktails (1680 Calle de Alvarez, 575-652-3414, [drypointdistillersnm.com](http://drypointdistillersnm.com)).

Also in Mesilla, **Josephina's Old Gate** offers charmingly historic lodgings (2261 Calle de Guadalupe, 575-525-2620, [josefinasgate.com](http://josefinasgate.com)). In Las Cruces, reserve a room at the towering **Hotel Encanto** (705 S. Telshor Blvd., 575-522-4300, [hotelenanto.com](http://hotelenanto.com)).





At more than 50 miles above Earth, the pilots shut off the rocket motor, allowing passengers to leave their seats and enjoy several minutes of weightlessness. Gravity soon pulls the ship back toward Earth, and at 50,000 feet the pilots initiate a dynamic glide to the Spaceport America runway.

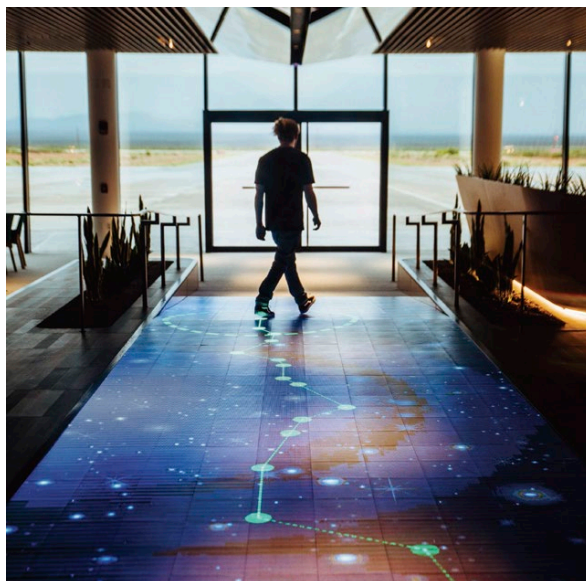
Virgin Galactic's pilots have completed several tests of these maneuvers, hitting two milestones in Mojave—a crewed flight in December 2018 and a single-passenger flight in February 2019—and another in May 2020, a glide test from Spaceport.

The company had hoped to have at least Branson in space this year, if not paying clients as well; the pandemic set that back.

It must still complete additional glide flights, powered flights, and cabin tests, as well as various pilot proficiency tests, and achieve all 27 of the FAA's commercial licensure provisos (it has met 25).

"Space has always captivated the imagination of people," Crane says. "We're on the cusp of starting human space-flight on a regular basis. That will be the beginning of a new era. Astronauts never come back from space and say, 'That was okay.' They come back with a changed perspective. Now we'll see artists, musicians, and teachers having

■ **FROM ABOVE:** The Gaia lounge combines elegant design and an endless view. Its interactive Astronaut Walkway rewards visitors who choose a more circuitous path.



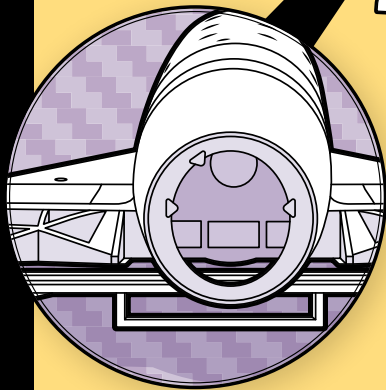
access to space travel. We'll see what will come from those new perspectives."

**OUTSIDE THE GATEWAY TO SPACE, I TAKE IN THE THREE-**story glass windows along its eastern facade. The Fosters + Partners-designed building feels cutting-edge yet reminiscent of the *Jetsons* designs that emerged when the space race first captured America's consciousness.

■ WhiteKnightTwo's wingspan is 140 feet, around the same as a Boeing 737.

■ SpaceShipTwo, which carries two pilots and six passengers, is mounted under the mother ship for takeoff. When the ships reach around 50,000 feet, SpaceShipTwo is released for its blast into space.

■ After SpaceShipTwo's rocket motor fires and propels it into space, it doesn't fire again. Reentry and landing are done in a glide without further propulsion.



■ All the ships' structural components are made of 100 percent carbon composite, which is a quarter the weight of steel but has similar strength.



■ SpaceShipTwo has 17 windows to maximize the astronauts' views of space and the Earth. Inside, each is bordered by a halo that frames the view and acts as a hand- and foothold during weightlessness.

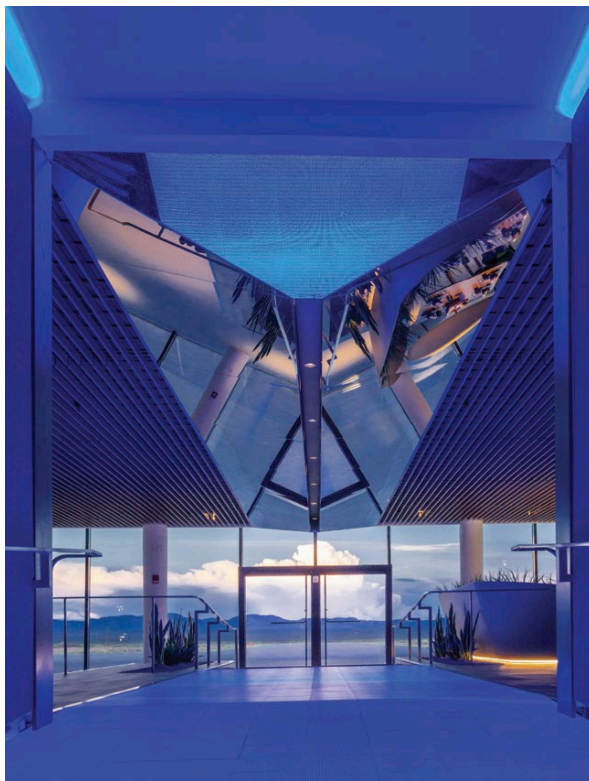
## TIGHT SHIPS

Technology rules at Virgin Galactic, where engineers and pilots have collaborated on building aircraft that can take paying customers on once-in-a-lifetime trips.

■ The seats are dynamic, moving to optimize g-forces as needed. They also lie flat during apogee (when astronauts experience microgravity) to maximize cabin space for floating.

■ SpaceShipTwo uses a wing-flexing system that allows pilots to change the angle of the entire wing. Similar to the way the plastic feathers on a badminton shuttlecock make it float, this maneuver makes the ship more stable for reentry.





Overhead, I hear the buzz of Virgin Galactic's progress. Italian pilot Nicola Pecile is flying a single-person acrobatic aircraft to maintain his g-force tolerance.

I spot the plane's birdlike form in the cloudless sky as he begins a corkscrewing dive toward the desert floor. My stomach flips. Just as quickly, Pecile floats out of the spin and points the nose back toward the heavens to do it all again.

More than 300 vertical launches have taken off in the past decade, many during the annual Spaceport America Cup, the world's largest intercollegiate rocket engineering conference and competition.

Vertical launchpads are situated toward the property's southern edge, and a second horizontal runway stretches north of the Gateway to Space. (Because the spaceport sits at 4,600 feet above sea level, the staff is quick to joke that the first mile of space altitude comes free.)

**"Space has always captivated the imagination of people. We're on the cusp of starting human space-flight on a regular basis. That will be the beginning of a new era."** —ALEANNA CRANE

Although Virgin Galactic is Spaceport America's most headline-grabbing anchor tenant, three others at the state-owned facility are making aerospace history as well. UP Aerospace, a space-launch and flight-test service, has been experimenting with aerobraking and heat shields for

■ **ABOVE, FROM LEFT:** The Astronaut Walk at the Gateway to Space speaks to the monumental mission. Artist Otto Rigan's *Genesis* sculpture glitters back at the sky.

NASA's Mars missions. SpinLaunch uses kinetic technology rather than rocket-fueled launches to send small satellites into space at a fraction of the usual cost. And unmanned flight company AeroVironment is testing a communications platform, aka a cell tower in the sky, designed to provide internet connectivity to the farthest reaches of the globe.

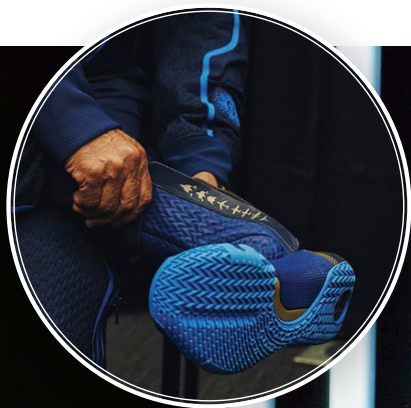
A non-tenant customer, Exos Aerospace, which uses the spaceport's facilities for research, is exploring space-based manufacturing, which could have applications as broad as computer chips and human medicine. Boeing has also used the grounds for research, testing parachutes that slow a vehicle's reentry from space and evaluating the remote capabilities of a helicopter by landing it on a trailer moving down the spaceway.

Beyond that, the spaceway and Gateway to Space have served as backdrops for a *Harper's Bazaar* fashion shoot, an episode of *Jay Leno's Garage*, and a Super Bowl commercial.

As I depart, I walk around the *Genesis* sculpture, which marks Spaceport America's entrance and exit. Tucson, Arizona-based artist Otto Rigan, who has Roswell roots, inlaid cast glass into the iron sculpture's massive U-shaped form.

I watch as sunlight dances off the mirrored glass, and for a moment it seems as though the stars are just a little closer to Earth. ■





■ Under Armour Clone adaptive technology in the boot forms to the exact shape of the astronaut's foot. HOVR foam and mesh Energy Web technology in the sole minimize impact during zero-gravity movement.

■ The suit includes a push-to-talk button on the arm for in-flight communication, which allows the astronaut to speak to the pilots. Yes, kind of like on *Star Trek*.



■ The Virgin Galactic Flight DNA insignia represents the progression of our desire to fly. It begins with an image of Icarus, moves through the *Wright Flyer*, the *Spirit of St. Louis*, the Bell X-1 *Glamorous Glennis*, the Boeing 747, the Apollo Lunar Module, and SpaceShipOne, and ends with Virgin Galactic's SpaceShipTwo.

■ Unique to each mission, the mission patch features the name of each astronaut and an image that blends each individual's iris to form one. Patches also indicate the wearer's country.

## WELL SUITED

Under Armour designed the four-part Virgin Galactic spacewear system (a base layer, space boots, a training kit, and the spacesuit itself) from scratch to meet the demands of space exploration. Fitted in advance, the custom spacesuit is ready for customers when they arrive at Spaceport America. After their flight, astronauts are awarded their flight jackets and wings in a special ceremony.

■ The spacesuit liner features newly created fabrics, such as Tencel Luxe, SpinIt, and Nomex, which are used for temperature control and moisture management.

# Space Odysseys

From evidence of an ancient supernova to development of a cutting-edge spaceport, the New Mexico Space Trail invites explorations of otherworldly wonders.

BY ELIZABETH MILLER



■ **LEFT:** An array of rockets at the White Sands Missile Range Museum tracks the early years of the space race.

**T**he Land of Enchantment has drawn eyes to the skies for millennia. In more recent decades, our wild and open spaces made room for the earliest research into ways to visit the stars. Now, a burgeoning space tourism industry attracts a new generation of adventure seekers. A road-tripper with a voracious appetite can step into the past, present, and future of cosmic wonders—without ever leaving terra firma.

Some sites are open; others are on a pandemic pause. Always call ahead. And take this handy guide to the New Mexico Space Trail along for the ride.

## Ham on the Side

When NASA was testing early systems for sending humans into space, a chimpanzee named Ham became its first test pilot. Ham, an acronym for Holloman Aeromedical Research Laboratory, the Air Force facility near Alamogordo where he was trained, completed his mission, lived in a zoo, and was buried at the **New Mexico Museum of Space History** ([nm spacemuseum.org](http://nm spacemuseum.org)). Visitors often leave tokens at his gravesite—flowers and bananas, but also, to the bafflement of management, Pez dispensers.

Inside the Alamogordo museum, New Mexico's robust role in the Space Age plays out in exhibits,

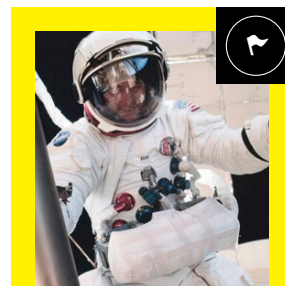
including replicas of early satellites and tracks used for testing the human body's response to speed. The International Space Hall of Fame pays tribute to astronauts, engineers, astronomers, and visionaries, including Gene Roddenberry, lauded by the museum for creating *Star Trek* and inspiring generations of space fans.

Museum staff also manage the **New Mexico Space Trail** ([nm spacectrail.org](http://nm spacectrail.org)) of destinations pivotal to space history.

## Training Grounds

Most Apollo astronauts were pilots, not scientists (New Mexico native Harrison Schmitt was one exception), but their task

on the moon called for sampling its geology and recording its geography. To prepare for the job, astronauts and geologists hiked New Mexico, examining ancient volcanoes, counting layers in canyon walls, and practicing how to collect rock samples and write field notes. Some outings saw them hiking through the desert and radioing back descriptions of what they found, after



## GOLD!

Astronaut Alan Bean heard about New Mexico's gold-mining history while training here and caught a little gold fever. He pulled a hubcap off his rental car and used it to pan for gold in a stream, turning up a few sparkling flakes ... of mica.



which geologists walked the same sections to check their work. Explore those areas through these hikes:

### Río Grande Gorge.

The Hadley Rille, a lunar feature that NASA wanted the Apollo 15 crew to study, is strikingly similar in dimensions to the Río Grande Gorge. Astronauts came to this area to practice taking rock samples and driving a replica lunar rover over sand and jumbled boulders. Hike through the sagebrush and contemplate the blackened basalt obstacle course at the Taos Valley Overlook Trailhead, south of Taos on NM 68, which accesses a 20-mile network of trails ([blm.gov/visit/taos-valley-overlook-trails](http://blm.gov/visit/taos-valley-overlook-trails)).

### Philmont Scout Ranch.

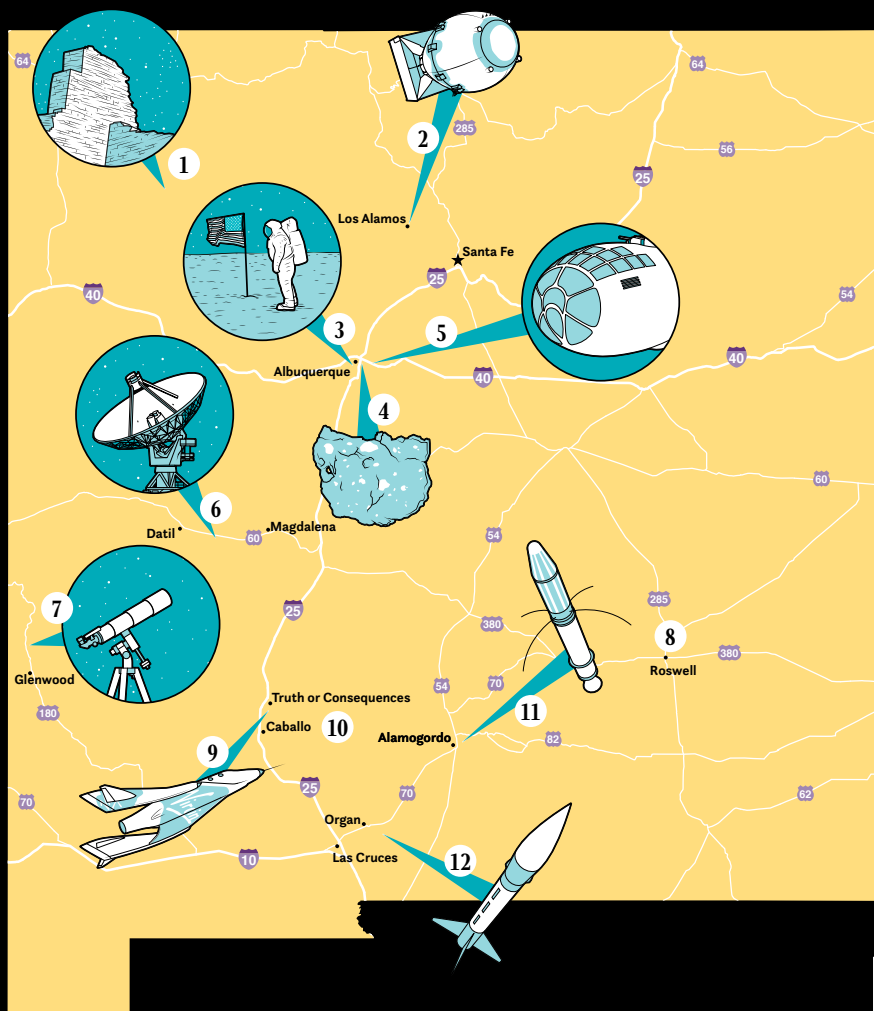
Astronauts spent a day sketching, describing, and defining the various exposures on Slate Hill, a 7,600-foot peak facing US 64 just west of Cimarrón. Explore the area from the Turkey Creek Canyon trailhead, a 2.4-mile out-and-back. Look for the trailhead near the Philmont sign.

### Valles Caldera National Preserve ([nps.gov/vall](http://nps.gov/vall)).

Astronauts spent three days studying volcanic activity where the swells of magma settled into domes. A 7.2-mile trail encircles one, the Cerros del Abrigo.

## Starry, Starry Night

Revel in some of the darkest skies in the nation at the **Cosmic Campground** ([nmmag.us/cosmiccamp](http://nmmag.us/cosmiccamp)), near Alma, in the Gila National Forest, where the night sky is nearly untouched by signs of other



## HIT THE TRAIL

Stops on the New Mexico Space Trail include:

**1.** Marvel at a Chacoan petroglyph depicting an ancient celestial event.

**2.** Learn the history of Los Alamos National Laboratory at the Bradbury Science Museum.

**3.** Check out replicas of Mars

Rovers at the New Mexico Museum of Natural History & Science.

**4.** See a superb collection of space rocks at UNM's Meteorite Museum.

**5.** Wander through nine acres of aircraft exhibits outside the National Museum of Nuclear Science.

**6.** Look for the Very Large

Array's enormous antennae from the road.

**7.** Get enchanted with dark skies at the Cosmic Campground.

**8.** Step into Robert Goddard's rocketry workshop at the Roswell Museum and Art Center, then hit up the International UFO Museum.

**9.** Begin a trip to Spaceport America at its

visitor center.

**10.** Hit Spaceport America, where the future of space history is being written today.

**11.** Celebrate astro-feats at the New Mexico Museum of Space History.

**12.** Tour exhibits on space exploration indoors and out at the Space Murals Museum.



■ **CLOCKWISE FROM TOP LEFT:** A rocketry display at the New Mexico Museum of Space History, in Alamogordo. Ham the astrochimp's grave. The National Museum of Nuclear Science & History, in Albuquerque. A supernova petroglyph in Chaco Canyon.

humans. The campground perches on a high point, and the Mogollon Mountains ripple along the eastern horizon, affording a bowl-like view of the sky. Out here, you can see the Milky Way unfurl like a pale stream. Four concrete pads provide hard surfaces for BYO telescopes.

In 2016, the International Dark-Sky Association (IDA) recognized the campground as the first Dark Sky Sanctuary in the Northern Hemisphere, but New Mexico is blessed with an abundance of options. “The natural conditions,

because of the elevation and the weather, combined with the way the population development has occurred in the state, means there are some exceptionally dark places where you can view almost pristine skies,” says IDA program manager Adam Dalton.

A few of our other favorite campsites: At **El Morro National Monument** ([nps.gov/elmo](http://nps.gov/elmo)), the full moon shines brightly enough to hike the two-mile Headland Trail by its light alone. Rolling grasslands wrap around placid waters at **Clayton Lake State**

**Park** ([nmmag.us/claytonstatepark](http://nmmag.us/claytonstatepark)), the first New Mexico park to earn IDA recognition and a place that astronomers have called “outstanding” and “unequaled.” At **Chaco Culture National Historical Park** ([nps.gov/chcu](http://nps.gov/chcu)), hike by day to a pictograph that shows what’s thought to be a supernova, a star that exploded in 1054, then stay for a mind-blowing star show at night.

Pro tip: White lights, including cellphone screens, compromise night vision for up to half an hour. The Cosmic Campground bans

lights without a red filter. Some headlamps come with a red-light option. For a DIY solution, rubber-band red plastic wrap to a flashlight.

**Party Up**  
**Capulin Volcano National Monument** ([nps.gov/cavo](http://nps.gov/cavo)) hosts dark-sky star parties throughout the summer and on occasional nights the rest of the year at the volcano’s base, providing giant telescopes to view galaxies, nebulae, planets, and other wonders. Pair the stunning sights of archaeological treasures



and a sky brimming with stars during monthly astronomy nights at **Salinas Pueblo Missions National Monument** ([nps.gov/sapu](https://nps.gov/sapu)), which can include rock-art tours, sunset photo ops, and telescopes steered by park staff and local astronomy-society volunteers. **Fort Union National Monument** ([nps.gov/foun](https://nps.gov/foun)) pairs an evening tour of the fort's ruins with a guided tour of the night sky.

## Do You Believe?

If you're looking for signs of extraterrestrial life, try the annual **UFO Festival**, in Roswell every July ([ufofestivalroswell.com](https://ufofestivalroswell.com)). The **International UFO Museum and Research Center** ([roswellufo-museum.com](https://roswellufo-museum.com)) delves into the purported Roswell Incident and fills its gift shop with the best alien kitsch around, including tinfoil

hats. Farther north, the town of Dulce has a history of people who swear to UFO sightings and cattle mutilations. The **Dulce Base UFO Conference** (on Facebook @dulcebaseufo) and occasional lectures strive to uncover the truth.

## Observe This

The **Sunspot Solar Observatory** ([sunspot.solar-visit.com](https://sunspot.solar-visit.com)), in the Lincoln National Forest, uses a rotating telescope more than 300 feet tall, two-thirds of which is buried, to observe and study the sun. The Air Force funded the observatory's initial construction and chose its location, which it also used as a high-altitude ground station to track experiments with V-2 rockets. Walk a half-mile trail around the park or make a reservation for a tour of the telescope's inner workings.

That's not the only giant scope looking at the sky. The University of New Mexico's **Campus Observatory** ([nm-mag.us/unmob-observatory](https://nm-mag.us/unmob-observatory)) offers a 14-inch telescope to public stargazers on Friday evenings during the semester. The telescope mirror at New Mexico Tech's **Magdalena Ridge Observatory** ([mro.nmt.edu](https://mro.nmt.edu)) was a backup option for the Hubble Space Telescope. Look for the observatory's first-Saturday star parties when they resume. And New Mexico State University's **Tombaugh Observatory** (astronomy



■ **FROM TOP:** V-2 rockets spurred space exploration after World War II. The Space Murals Museum, 12 miles northeast of Las Cruces, includes indoor exhibits and a series of murals on a massive water tank ([spacemurals.net](https://spacemurals.net)).

.nmsu.edu) usually opens once a month. It's named for Clyde Tombaugh, who discovered the dwarf planet Pluto in 1930, worked at the White Sands Missile Range, and taught astronomy at NMSU.

## Rocket Science

"The two things that changed the world in the 20th century—the beginning of the Space Age and the beginning of the Atomic Age—both occurred here, a week apart," says Darren Court, curator of the **White Sands Missile Range Museum** ([wsmr-history.org](https://wsmr-history.org)), near the town of Organ. "This is an important place."

The vast open spaces

of a dry lake bed filled with white gypsum sand, few people, and cooperative weather combined to make the location ideal for launching the first man-made object to travel into space, Wernher von Braun's V-2 rockets. In 1948, one of his rockets was used to snap the first images of Earth against the black backdrop of space. The area also tested the engines used in some of the lunar modules on the Apollo missions.

"This was one of those cases where that engine had to work the first time," says Joseph Page II, author of *New Mexico Space Trail* (Arcadia, 2013). "Those Apollo astronauts owe a lot



## SNEAK PEEKS

Because UNM geologists and astronomers had expertise on extraterrestrial materials in meteorites, they were some of the first people to study samples brought home by the Apollo moon missions.



■ **LEFT:** The network of antennae at the Very Large Array, 51 miles west of Socorro, essentially creates a single telescope that's spread across many miles.

stop on NM 60 affords a view of some of the antennae even when visitor facilities are closed.

## Show and Tell

The University of New Mexico has gathered about 1,500 spectacular meteorites and shows about a hundred of them in

its **Meteorite Museum** ([meteorite.unm.edu](http://meteorite.unm.edu)). Check out the display of pallasites, a type of meteorite containing black iron and gem-quality peridot crystals, which, when thinly sliced, let green light gleam through. When intergalactic rocks enter Earth's atmosphere, heat forms them into new shapes. Some are dimpled and shiny, while others look tumbled and charred. Some were blasted off Mars, others the moon. Meteorites fall randomly, but you're most likely to find them in the desert, where arid conditions preserve them. They're often recognizable by their odd surfaces, high density, and, occasionally, an ability to attract magnets.

Other museums worth pulling on your moon boots include the **Bradbury Science Museum** ([lanl.gov/museum](http://lanl.gov/museum)), in Los Alamos, which explores the history of the then-secret mission to make the world's first atomic bomb, plus ongoing

research in nanotechnology, biofuels, and more. The **National Museum of Nuclear Science & History** ([nuclearmuseum.org](http://nuclearmuseum.org)), in Albuquerque, includes a nine-acre outdoor exhibit area with World War II-era planes, including the B-29 Superfortress. The **New Mexico Museum of Natural History & Science** ([nmnaturalhistory.org](http://nmnaturalhistory.org)), in Albuquerque, has full-scale replicas of the Mars Exploration Rovers, *Spirit* and *Opportunity*.

## The Next Gen

To witness what's yet to come, check out the info on page 3 and plan your trip to **Spaceport America** ([spaceportamerica.com/visit](http://spaceportamerica.com/visit)). ■



## SO. MUCH. SAND.

White Sands Missile Range offered a backup landing site for space shuttles. *Columbia* used that option in 1982, during one of its 27 successful missions. "They got so much of that gypsum sand inside the vehicle that they really tried to avoid landing there again," says NASA historian Jennifer Ross-Nazzari.

of credit to the guys here at White Sands."

The missile park at White Sands Missile Range Museum shows pieces of those achievements, among them a restored V-2, missiles, early drones, and a VC-6A aircraft that, legend has it, von Braun flew between White Sands and the Redstone Arsenal, in Alabama. The area's history is captured with a model of the McDonald Ranch, from which scientists watched the first atomic weapon explode in July 1945, as well as leather chaps and a 700-year-old water jug found intact there. The first *Star Wars* movie includes audio recorded at White Sands, and Lucasfilm gave the museum a Darth Vader helmet as a thank-you.

## Rocket Man

When Robert Goddard first wrote about using liquid-fueled rockets to escape Earth's gravity, it seemed like an out-

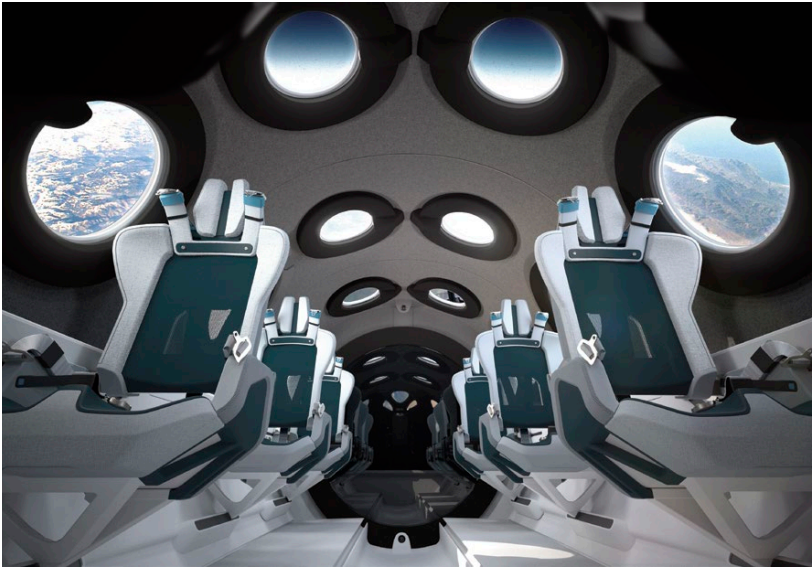
rageous notion. But he defied doubters in 1930, launching a rocket from near Roswell that reached a record-setting 2,000 feet and 500 miles per hour. He's remembered with a statue outside the **Roswell Museum and Art Center** ([nmmag.us/rmac](http://nmmag.us/rmac)) and a replica gantry, the support structure that holds rockets on the launchpad. A wing of the museum recreates his workshop, and the **Goddard Planetarium** ([nmmag.us/goddard](http://nmmag.us/goddard)) has a full-dome digital theater.

## Hearing Aid

The **Karl G. Jansky Very Large Array** ([nmmag.us/vla](http://nmmag.us/vla)) radio antennae, west of Magdalena, listen for faint intergalactic sounds and translate that noise into richly detailed images. Research contributed to the discovery of ice on Mercury—a surprise for the planet closest to the sun—and a mini-spiral of hot gas ringing the black hole at the center of the Milky Way. A roadside rest



## BEHIND THE SCENES



■ **CLOCKWISE FROM LEFT:**  
Inside the spaceship. Design-  
ing astronaut suits. The second  
SpaceShipTwo. Welcoming the  
crafts to New Mexico. Virgin  
Galactic's Pilot Corps.



### HOME BASE

Since moving its spaceships to New Mexico, Virgin Galactic has expanded its research, staff, and training flights, amping up the region's technological verve.





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