

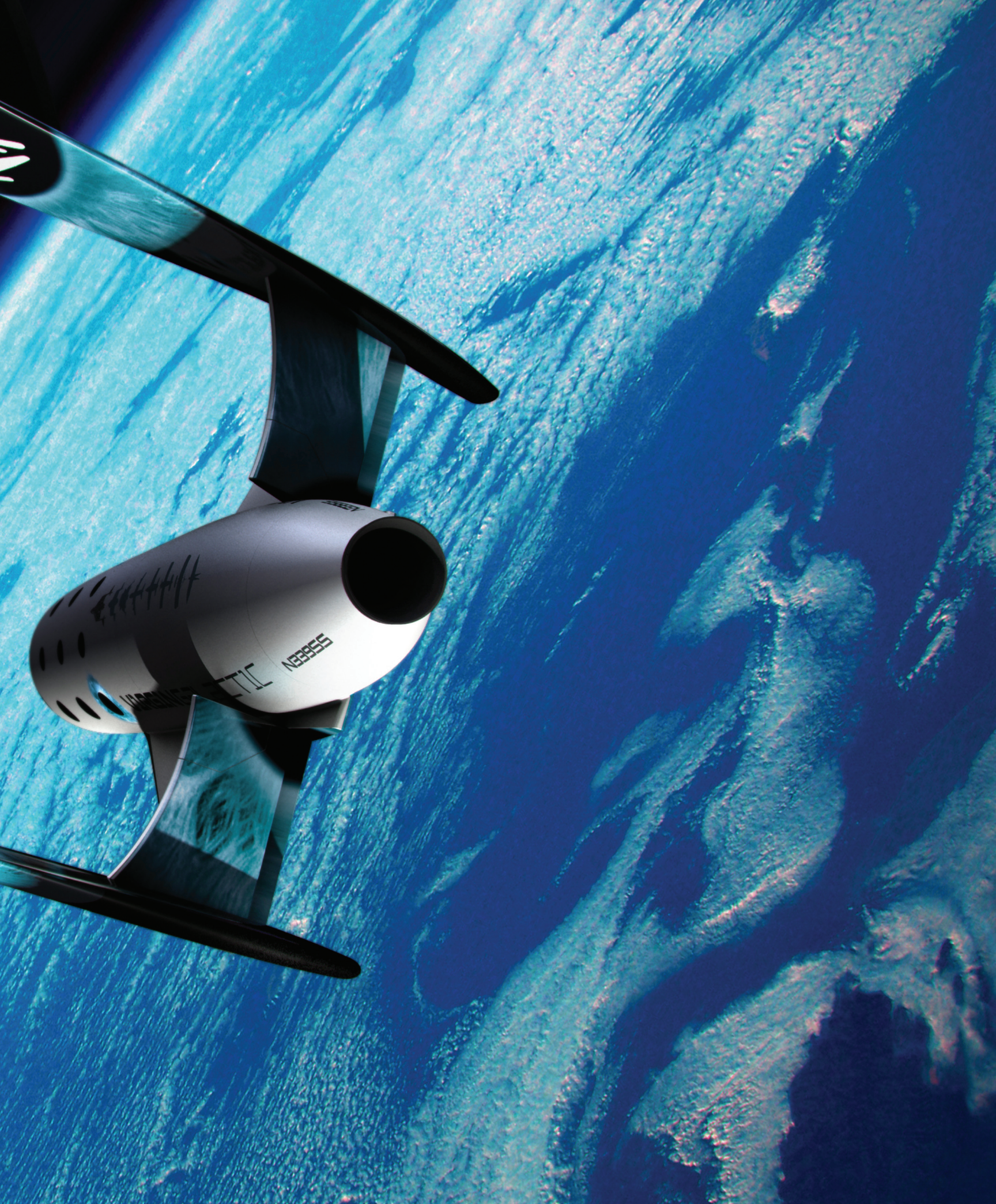
# *Space, The Final Frontier*

A Virgin Galactic spacecraft is shown in space, positioned above the blue and white horizon of the Earth. The spacecraft is sleek and black, with the 'Virgin Galactic' logo visible on its side. The background is the deep black of space, contrasting with the bright blue of the planet's atmosphere.

**Sir Richard Branson's Virgin  
Galactic Offers a Day Trip  
That Is Out of This World**

Story By Keith Michaud









**A** day in the not too distant future, having an out-of-this-world vacation will mean having a vacation that is truly out of this world.

Nowadays, perhaps the most galactic trend in sightseeing is “space tourism.”

Go ahead, snicker and make jokes about vacationing where no one has vacationed before. But the truth is, some very impressive heavy hitters, including Las Vegas’ Robert Bigelow, Microsoft co-founder Paul Allen, legendary aviation designer Burt Rutan and Virgin Group’s Richard Branson, are banking on the future allure of space tourism. It won’t be long now until future vacation choices will include suborbital adventure day trips and overnight stays at bed-and-breakfasts in space.

“This will happen,” said Dr. Darrell W. Pepper, a mechanical engineering professor at the University of Nevada, Las Vegas, and director of the Nevada Center for Advanced Computational Methods. “Bob Bigelow has already demonstrated that he can get habitats into space. I wonder what they will serve for breakfast (at space BandBs); and will there be excursions such as walks in space?”

Bigelow, already called a “space hotel pioneer” by popsci.com and space.com, founded Bigelow Aerospace in 1999 to develop “affordable, reliable and robust expandable space habitats,” according to the firm’s website. The habitats act as shelters that can be converted into everything from space hostels to galactic resorts.

So this is not some cosmic pie in the sky. This is on the verge of being very real.

U.S. presidents since Ronald Reagan have encouraged the commercialization of space transport to cut the costs of sending NASA crews and supplies to the International Space Station and elsewhere in space. That makes space tourism a natural outcropping of the way we will think about space travel in the future.

“Any step forward that the private sector makes for advancing space travel is significant,” said Pepper. “Until such time that commercial ventures become available, we will always be held captive to the desires and wishes of the federal agencies.

“Mankind has always looked to the stars. We will get there someday,” added Pepper. “But it could be a long time coming. Advances in the aerospace field are pretty dramatic and continually pushing the envelope of our knowledge and abilities. ... Who knows what we will see in the next 10 years, let alone the next 50 years? Think of where we went from the Wright Brothers in 1903, to missiles, rockets and Sputnik in 1957.”

The Federal Aviation Administration’s Office of Commercial Space Transportation, which regulates the commercial space transportation industry and encourages, facilitates and promotes private sector space launches and reentries, has issued eight spaceport operator licenses since 1996, including one in New Mexico called Spaceport America. That \$209 million facility, which is situated on nearly 18,000 acres that is owned mostly by the state of New Mexico west of the White Sand Missile Range, is 80 percent finished with an expected completion by the end of the year.

“We don’t comment on the dates on which we’ll start service,” says William J. Pomerantz, vice president of Special Projects for Virgin Galactic. “... We’re working through our test program as quickly as we can, while remaining absolutely focused on safety. We’re greatly looking forward to our first flights from New Mexico.”

But this will not be your father’s airport.

“Spaceport America is not really anything like a general aviation airport,” said David Wilson, a Spaceport America spokesman. “It’s a spaceport. ... The spaceport is not being used as an airport where general aviation and commercial aviation operate. It is being used for spaceflight and aerospace related (research and development) work.

“Spaceport America is the first purpose-built commercial spaceport,” added Wilson. “This means it is being custom-built for the specific needs of its anchor tenant (Virgin Galactic) and other tenant customers like UP Aerospace and Armadillo Aerospace.”

Construction has not stopped activity at the spaceport. Wilson said there have been eight rocket launches since 2006. And Virgin Galactic has announced it will do atmospheric research with the National Atmospheric and Oceanic Administration.

Virgin Galactic, a subsidiary of Branson’s Virgin Group, has a 20-year lease at the New Mexico Spaceport Authority Building and will offer suborbital excursions for about \$200,000 per person. With two carrier crafts and five space ships being rotated for maintenance, Virgin Galactic one day hopes to offer two flights a day.

The ticket price is just for starters, of course. Everyone says prices will come down with emerging technology and growing competition. But the cost does not seem to be hurting sales. More than 400 people have signed up, either through the Virgin Galactic website or “accredited space agents,” to be “Virgin Galactic astronauts.”

Passengers will board a SpaceShipTwo, which will be carried to 50,000 feet by the larger WhiteKnightTwo, before rocketing to a maximum planned altitude of 360,000 feet above Earth. The spaceship, carrying six passengers and two pilots, will then glide back

**“Then the countdown to release, a brief moment of quiet before a wave of unimaginable but controlled power surges through the craft. You are instantly pinned back into your seat, overwhelmed but enthralled by the howl of the rocket motor and the eye-watering acceleration which, as you watch the read-out, has you traveling in a matter of seconds, at almost 2,500 mph, over three times the speed of sound.”**

*Virgin Galactic marketing*





The VSS Enterprise is the first of five commercial suborbital spacecrafts being constructed by Virgin.



Behold the beautiful setting of New Mexico's Spaceport America.



to Spaceport America.

“... It’s amazing that we’re already nearing the point where the number of people who have signed up to fly with us will match the number of people who have flown into space ever,” says Pomerantz.

SpaceShipTwo and WhiteKnightTwo—the first two were named VSS Enterprise and VMS Eve—are undergoing continuing tests in the Mojave Desert, before being declared ready to take on paying passengers. But during a celebration of the opening of a new San Francisco International Airport terminal in early April, the crafts, flying in tandem, landed on one of the terminal’s runways that is parallel to the runway on which a Virgin Airlines aircraft landed.

### *Getting there from here*

Spaceport America is in a remote region of Southern New Mexico, not far from the historic El Camino Real trail. That is on purpose. The stable, dry weather, an altitude of 4,600 feet with a low population

in the area and congestion-free restricted airspace shared with the White Sands Missile Range make it a splendid location for launches and landings.

“When we started this venture, we went looking for a region of the country that was willing to take this bold step with us. New Mexico had the ... enthusiasm and commitment to make this project happen. The people of New Mexico have made a substantial investment in a beautiful new facility, and we’re proud to call it our home,” says Pomerantz.

But the remoteness also means that visitors will have to be a bit more committed to the trip. Las Cruces and Truth or Consequences, N.M., are the nearest communities of size. That is about 11 or 12 hours in a car when driving from Las Vegas, although Las Cruces does have an international airport.

Jobs created during the construction of the spaceport and jobs that come later after all aspects of the spaceport are operational mean

## *Learn more about Virgin Galactic and space tourism*

### *Virgin Galactic*

[virgingalactic.com/](http://virgingalactic.com/)

### *Spaceport America*

[spaceportamerica.com/](http://spaceportamerica.com/)

### *Bigelow Aerospace*

[bigelowaerospace.com/](http://bigelowaerospace.com/)

### *The SpaceShip Company*

[thespaceshipcompany.com/index.html](http://thespaceshipcompany.com/index.html)

### *The Ansari X Prize*

[space.xprize.org/ansari-x-prize](http://space.xprize.org/ansari-x-prize)

### *Las Cruces Chamber of Commerce*

[lascruces.org/](http://lascruces.org/)

### *Truth or Consequences Chamber of Commerce*

[truthorconsequenceschamberofcommerce.org/](http://truthorconsequenceschamberofcommerce.org/)

### *U.S. Office of Commercial Space Transportation*

[faa.gov/about/office\\_org/headquarters\\_offices/ast/](http://faa.gov/about/office_org/headquarters_offices/ast/)



Virgin Galactic's VSS Enterprise gliding back to the spaceport after a test run.



a boon for Las Cruces, Truth or Consequences, and surrounding communities. Two economic reports contracted by New Mexico Economic Development Department each came to positive conclusions about the Spaceport America project.

But reports are not people. Bill Allen, president and chief executive officer of the Las Cruces Chamber of Commerce, deals with people.

"Absolutely," Allen quickly replied to a question about whether the Spaceport America experience had been a good one so far. "It was very well-received. ... I think we're pretty happy about the way things are working out."

Tourists will not be allowed to simply drive up to the New Mexico Space Authority Building once it is completed, however.

"Visitors will ride to Spaceport America by coach tour bus departing from one of two welcome centers located in Hatch and Truth or Consequences, N.M.," said Wilson. "This will be the only way daily tourists can visit the spaceport."

To get to the spaceport from Las Cruces, you will drive north on Interstate 25 to the visitor center in Hatch, then hop on a bus to the New Mexico Space Authority Building (once it is completed) or grab the bus in Truth or Consequences. And while the spaceport will not be completed until later this year, online shoppers can visit the spaceport website and find clothing, travel mugs and other merchandise printed with the Spaceport America logo, and Spaceport America Hard Hat Tours now are available for a fee.

Wilson said the New Mexico Spaceport Authority is still working out the details on what amenities will be offered, but visitors can expect common features, such as a visitor center and interpretive displays, restaurants and gift shops, along with some not-so-common features, including the chance to see rockets and Virgin Galactic crafts launched into space.

"There has been a needs study done on the Spaceport America tourist experience," said Wilson. "The study shows that more than 500,000 people a year may want to come and tour the spaceport. A

contract will be awarded through a (request for proposal) process to a company to help define and develop the Spaceport America visitor experience."

### *Inside the building*

The Spaceport Authority Building was designed by international architecture firms Foster+Partners and URS Corp.

"The sinuous shape of the building in the landscape and its interior spaces seek to capture the drama and mystery of space flight itself, articulating the thrill of space travel for the first space tourists," states a Foster+Partners press release that was written at the time the firms won the competition to design the building. "Making a minimal impact on the environment, the scheme will be the first facility of its kind and a model for the future."

Once off the bus, visitors will stroll along a channel cut into the landscape that is lined with displays on the history of the area, its people and space exploration. Earth tubes placed under adjacent earth berms to cool the building, underfloor radiant heating and cooling, and natural ventilation will help the building achieve one of the highest LEED, or Leadership in Energy and Environmental Design, accreditations.

Inside the slightly more than 110,000-square-foot terminal and hanger facility, visitors will find the support and administration offices for Virgin Galactic, the New Mexico Spaceport Authority visitor area, the hanger for the Virgin Galactic ships, training area, mission control, departure lounge and more. The plans call for lots of glass, open areas and a 4,000-square-foot public viewing area, so expect to be able to see quite a bit of the entire operation.

"Organized into a highly efficient and rational plan, the Spaceport has been designed to relate to the dimensions of the spacecraft," according to Virgin Galactic's website. "There is also a careful balance between accessibility and privacy. The astronauts' areas and visitor spaces are fully integrated with the rest of the building | *Continued p.56*



# Virgin

From p.51| thrill of space travel. The more sensitive zones, such as the control room, are visible but have limited access.”

Viewing areas will open up to the tarmac and the runway that is 10,000 feet long, 200 feet wide and 42 inches thick, including 14 inches of concrete for the finished surface. That should accommodate most manned or unmanned aircraft in the world. The runway was dedicated and named the Governor Bill Richardson Spaceway in honor of Richardson’s efforts, while governor, to bring about the spaceport.

## *One Far-Out experience*

Of course, the visit will be different for those who are able to book a flight on Virgin Galactic ships. After all, those people will get a ride into space and back.

But simply handing over \$200,000—deposits start at \$20,000—is not enough. There will be preflight medical checks and two or three days of training at the Spaceport America training facility.

“Your preflight preparation will ensure that you are mentally and physically prepared to savor every second of your spaceflight,” reads Virgin Galactic’s website. “Basic emergency response training prescribed by our regulators will be at the forefront. Activities to familiarize you with the spaceflight environment will follow a close second.”

Those days of bonding with fellow passengers and training are followed by the actual flight.

Obviously, you cannot go into space in a conventional aircraft. Virgin started off with its SpaceShipOne and WhiteKnightOne, which were funded by Paul Allen and designed and built by Burt Rutan’s Scaled Composites in Mojave, Calif. The project was the 2004 winner of the \$10 million Ansari X Prize, a catalyst for private sector innovation in the field of manned space exploration.

Then, when Scaled Composites and Virgin Galactic formed a joint venture firm, they called The SpaceShip Co. to develop and build the next generation of ships using basically the same design, technology and carbon composite construction but at twice the size to accommodate six passengers and two pilots.

Virgin Galactic’s ships are cosmically fantastic and fantastically cosmic all at once. The craft that does the heavy lifting is WhiteKnightTwo, christened VMS Eve after Branson’s mother. The craft is unusual looking with its two fuselages and long wing that forms a flat-W shape. It is the largest all-carbon composite craft ever built and the most fuel efficient of its size. It can carry a hefty payload, climb to about 50,000 feet and fly for more than 2,000 nautical miles.

Passengers and two pilots will suit up and climb into SpaceShipTwo VSS Enterprise attached under VMS Eve’s wings between her two fuselages. VMS Eve will carry VSS Enterprise to altitude.

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a wave of unimaginable but controlled power surges through the craft,” reads Virgin Galactic’s marketing description of the expected experience.

“You are instantly pinned back into your seat, overwhelmed but enthralled by the howl of the rocket motor and the eye-watering acceleration which, as you watch the read-out, has you traveling in a matter of seconds, at almost 2,500 mph, over three times the speed of sound,” it continues.

Large windows in the craft will allow passengers to witness the atmosphere outside the craft turn from bright blue to the deep black darkness of space. The ship, then will pass the Kármán line, the boundary between Earth’s atmosphere and outer space, at about 62 miles straight up.

The hybrid rocket engine will be turned off after a short blast, and then passengers will get a sense of the quiet possible in the vacuum of space.

VSS Enterprise, at that point, will have reached high enough so that passengers will be free to float about the cabin in slow, graceful somersaults for a few moments in zero gravity. And perhaps gaze out the windows at the blue marble known as Earth.

Gravity eventually will begin to regain its pull, and passengers will return to their reclining seats, as deceleration begins to throw around some heavy G-forces. But this time, the pilots will be “feathering” the wings to help increase drag for the descent. This and other emerging technology, according to Virgin Galactic, will eliminate the need for the same sort of heavy heat shielding found on the space shuttle. This will greatly reduce the weight of the SpaceShipTwo and the cost of the ride.

The pilots then will glide the ship back to Spaceport America for a celebration.

While no one really wants to have an extended presentation of your vacation photos and stories, imagine the look on the faces of those who will sit still long enough to hear about the vacation that truly was out of this world.

# Startups

From p.45| It also was easily convertible to the Tuscan feel Payton was looking to convey with Annie’s Gourmet Italian, which she opened at 1716 W. Horizon Ridge Parkway, near McDonald Highlands in Henderson.

The restaurant was nominated as a great place for a romantic date on Valentine’s Day this year by news channel 8. Food critics in town have also been supportive with their reviews. The quaint spot has also become

popular for bar mitvah’s and birthday parties. Payton’s 75 year-old mother, the originator of many of the restaurant’s recipes, can often be found in the kitchen working her magic.

“She runs circles around all of us,” Payton says with a laugh. “My dad is in here all the time too. He’s in charge of quality control.”

With 12 indoor tables and six to eight tables outside, Payton’s success is bringing

calls for expansion.

“It’s the one thing a food reviewer said about us that was negative. It was that we were too small,” she says. “I’ve had people approach me about moving. But I don’t want to think of that right now. It’s been hard, but we’re making it.”

Expansion concerns truly put this entrepreneur in select company.