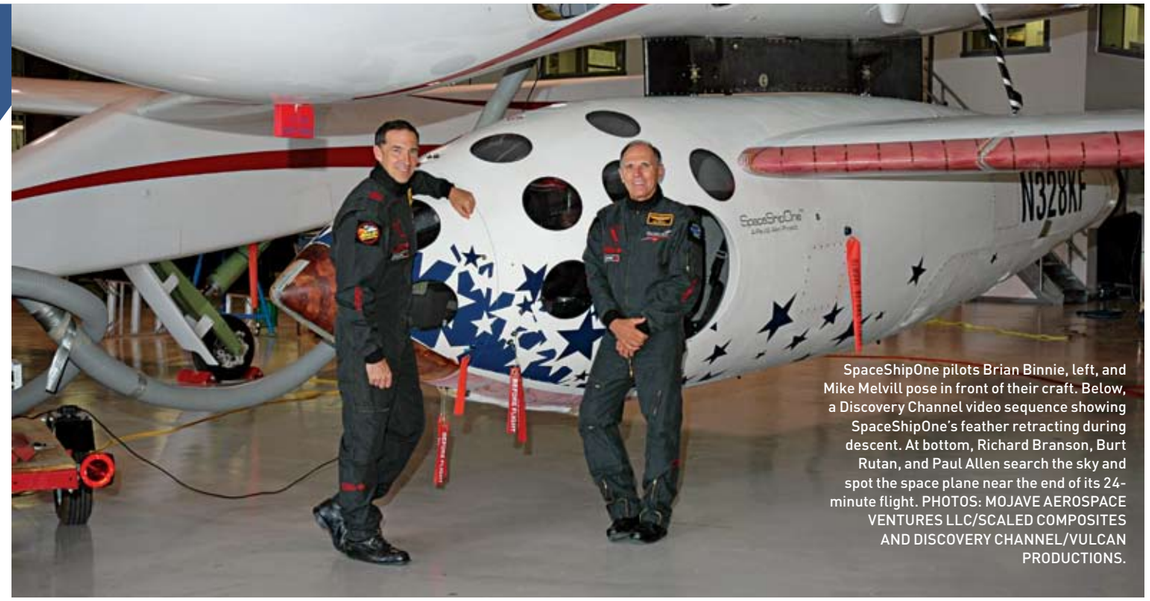
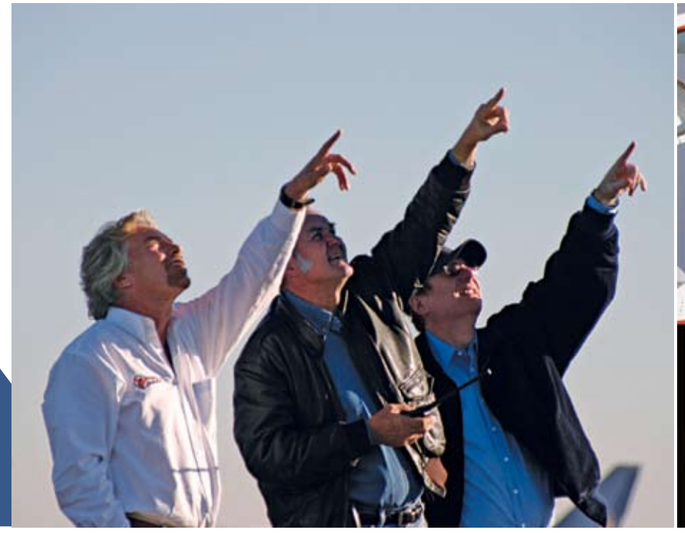
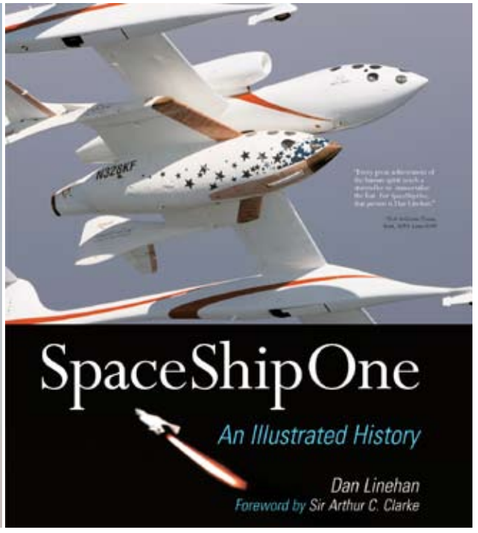
CAPTURING THE ANSARI X PRIZE



SpaceShipOne pilots Brian Binnie, left, and Mike Melvill pose in front of their craft. Below, a Discovery Channel video sequence showing SpaceShipOne's feather retracting during descent. At bottom, Richard Branson, Burt Rutan, and Paul Allen search the sky and spot the space plane near the end of its 24-minute flight. PHOTOS: MOJAVE AEROSPACE VENTURES LLC/SCALED COMPOSITES AND DISCOVERY CHANNEL/VULCAN PRODUCTIONS.

A new book, *SpaceShipOne*, chronicles the 2004 race to win the $10 million Ansari X Prize, awarded to the first privately funded group to successfully launch a reusable, manned craft into space twice within two weeks. Here is an exclusive excerpt. By DAN LINEHAN





Time was running out. Scaled Composites announced that they would be making their attempt at the Ansari X Prize on September 29, 2004. To win, SpaceShipOne would have to fly not just on that day, but would have to fly once more by October 13, leaving less than three months before the Ansari X Prize would expire. A major setback would take SpaceShipOne out of contention.

Brian Feeney's team were scheduled to launch their spacecraft Wild Fire on October 2, 2004. But there was a concern as to whether or not they would be ready. What would happen if the January 1, 2005, expiration rolled by without a winner?

"We had a contingency plan that whoever won it would get a trophy but not 10 million bucks," Erik Lindbergh said. "But whether or not it would have been as effective was a question. Whether or not it would have gained as much media attention was a question. And also whether or not we would have been able to keep the doors open was a question."

The X Prize Foundation wanted desperately to award the Ansari X Prize. To them, this wasn't a one-shot deal. Winning the Ansari X Prize meant jumping the first, and highest by far, hurdle on the path to public space access. But having the prize unclaimed was not their only fear. They knew that progress would only come from the successes and the failures of flying over and over again.

"It was very tense moments the night before and in the morning as we were gathering in the cold in Mojave to watch the launch," Anousheh Ansari said. "We were very anxious. We had to prepare ourselves for all sorts of possibilities."

There was no doubt of the risks involved with spaceflight. And although SpaceShipOne's first spaceflight earlier that June had some unexpected difficulties, the spacecraft and the pilot made it back safely. This was no guarantee for subsequent missions, which would continually stretch the flight envelope. After all, SpaceShipOne was still a research vehicle.

Everyone felt the enormity of the events. "To watch how the wives said goodbye to their husbands before they went up and wished them well was certainly a moment when you felt the responsibility of being involved in a project like this," Paul Allen said, "and them being worried for their husbands and you being worried, too."

The attempts at the Ansari X Prize would have unprecedented media coverage as well. Tens of thousands of people gathered to watch the launches in person. And the launches were broadcast live over television and the World Wide Web in a way like none other.

"The whole world was watching," said Gregg Maryniak, the executive director of the X Prize Foundation. "Most people don't appreciate that this was the first spaceflight ever that had video coming down that people—regular people—were watching in real time from a manned spaceship. It has never happened before. It has happened where in flight you could see snippets but never during ascent. When was the last time you saw NASA showing footage from inside the shuttle?"

The Ansari X Prize received upwards of 6 billion media impressions over its course, with a large percentage of them focused on the small company from the Mojave Desert that was ready to prove that its first spaceflight wasn't a novelty.

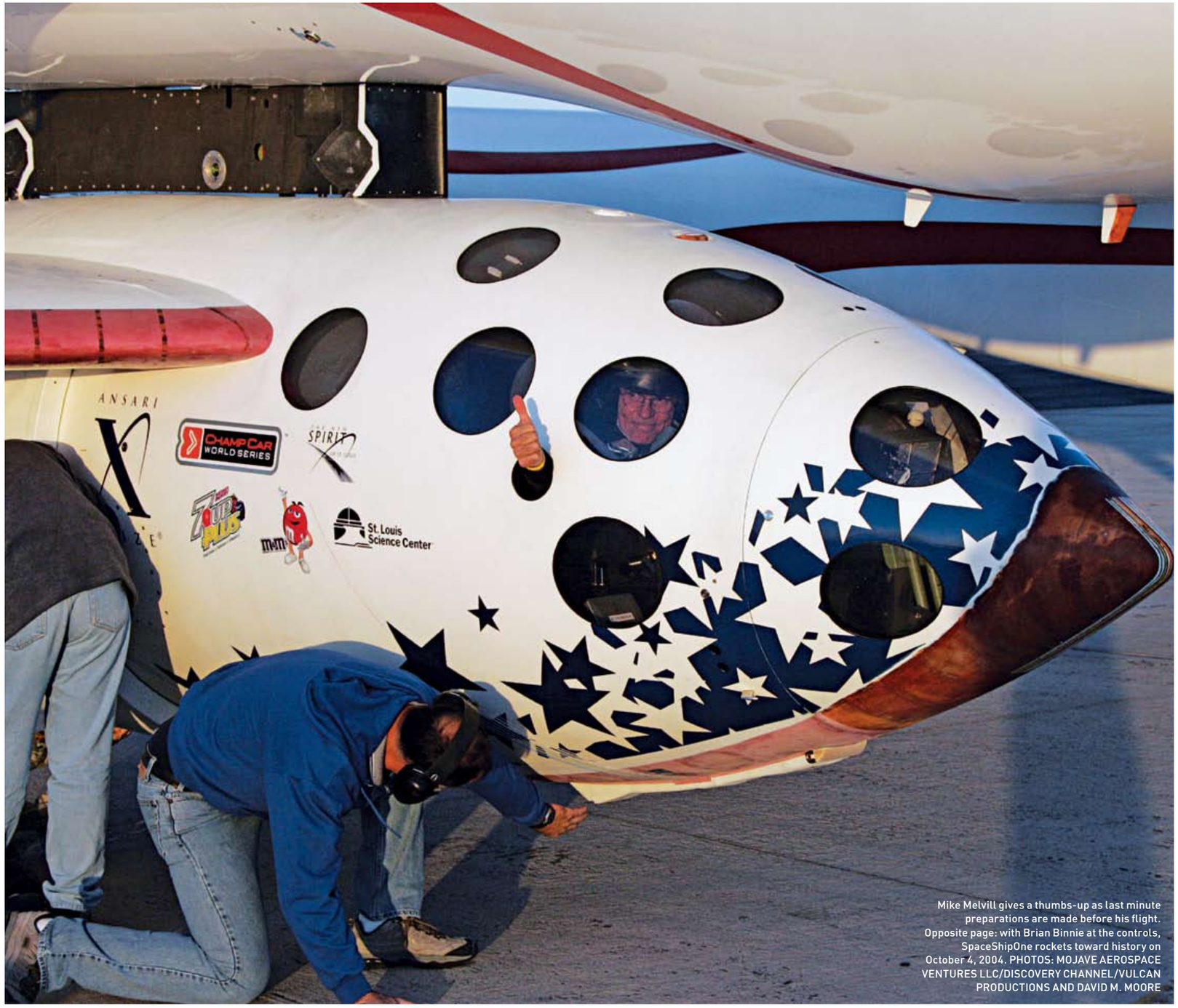
"The entire Tier One team that was taking this vehicle through flight testing had been working really, really hard for the last six weeks or so to where there was almost always someone at Scaled doing something with the vehicle or preparing for the flights or in the simulator," Brian Binnie said.

"We had a lot of anxiety between our first flight to space with Mike with the lightweight vehicle and trying to decide how we were going to make the adjustment to carrying 600 pounds [270 kilograms] of payload for the X Prize flights and still get to those same altitudes. There was concern that the rocket motor didn't have enough energy or impulse for us to get there. We had spent a lot of time worrying about that, wondering whether we needed to augment the motor with some other boosters. We eventually settled on a scheme that was really quite clever, but it took a while to work out the details."

"Ladies and gentlemen, we are at the start of the personal spaceflight revolution, right here, right now. It begins in Mojave, today. What is happening here in Mojave today is not about technology. It is about a willingness to take risk, to dream, and possibly to fail," said Peter Diamandis during the morning of September 29, 2004, as X1, the name of the first required flight of SpaceShipOne in the quest for the Ansari X Prize, prepared to launch.

Mojave was abuzz. A little more than three months earlier, Mike Melvill had earned his astronaut wings as he piloted SpaceShipOne on a history-making flight just past the 100-kilometer (62.1 miles or 328,000 feet) line demarking the start of space. Now Rutan's team set their sights on the most exciting and influential prize of the new millennium.

Pete Siebold, who had already flown two glide flights and one powered fight in SpaceShipOne, was selected to pilot the flight. Siebold had been training for three



Mike Melvill gives a thumbs-up as last minute preparations are made before his flight. Opposite page: with Brian Binnie at the controls, SpaceShipOne rockets toward history on October 4, 2004. PHOTOS: MOJAVE AEROSPACE VENTURES LLC/DISCOVERY CHANNEL/VULCAN PRODUCTIONS AND DAVID M. MOORE

years for this moment, but a health scare forced a very disappointing change.

"There were two other guys that were more than qualified to fly that flight," Siebold said. "At the time, I didn't feel as though I was doing the team any justice by putting myself in that situation and flying the mission when I probably wasn't in the right frame of mind and not to mention healthy enough." Siebold made the tough decision, but very fortunately his health issues were eventually determined to be nowhere near as serious as first suspected.

Rutan then turned to the test pilot with the most experience flying SpaceShipOne. Mike Melvill would get his chance to become an astronaut a second time, but to do so, he'd have to get back into training again.

Like Spirit of St. Louis, SpaceShipOne was stripped of anything absolutely nonessential. The lighter the craft, the greater the margin SpaceShipOne had for clearing the 100 kilometers (62.1 miles or 328,000 feet), because the removal of each and every pound enabled the spacecraft to go an additional 150 feet (46 meters) higher. SpaceShipOne needed all the help it could get. Melvill's earlier spaceflight had cleared the 100 kilometers by only the slimmest of margins, less than 500 feet (150 meters). And during this spaceflight, SpaceShipOne was not even carrying the full payload required by the rules of the Ansari X Prize.

Ironically, as the Scale Composites team scrimped for a pound here and a pound there, removing a total of about 45 pounds (20 kilograms), they would have to add weight to simulate two passengers. "We had to carry 400 pounds [180 kilograms] in the back seat, which was a heck of a lot more load in that thing than we ever had before. And I had to be ballasted," Melvill said.

Since Melvill weighted only 160 pounds (73 kilograms), he had to be ballasted up to 200 pounds (90 kilograms). These were the rules. But keeping the gross weight as low as possible was still critical. Every pound that didn't have to be carried was a pound that the force from the rocket engine didn't have to lift.

SpaceShipOne was carried into the air at 7:12 a.m. PST by White Knight with Brian Binnie behind the controls. Separation occurred at 8:10 a.m. PST when flight engineer Matt Stinemetze, who sat in the back seat of White Knight, released SpaceShipOne from an altitude of 46,500 feet (14,170 meters). Clear of White Knight and no longer pushing forward on the control stick, Melvill fired the rocket engine, which had been enhanced to provide greater performance by increasing the amount of propellants and burn time.

"You could sure hear it," Melvill said. "It was very loud—it was extremely loud.

"But it is a fabulous ride going up. I think that people who go on the next one—the passengers—will get the most exciting thing they ever did. A lot of noise. They are going really fast. The acceleration is dramatic. You are accelerating at a huge rate. You just watch the speed going up."

The cockpit shook as Melvill pulled the nose up, making a very sharp turn toward the sky above. "The straighter you flew, it the higher it would go in the same amount of time," he said. "We didn't need to burn the motor for its full length that it was capable of burning, because it went up there quite easily."

During his previous flight, though, he had battled wind shear, rocket asymmetries, and pitch control failure. These had prevented him from flying a very straight trajectory. Melvill was more than determined to nail the trajectory on this flight.

As SpaceShipOne blasted through the upper atmosphere, Melvill had closed up the two donuts on the TONU display, which meant he was doing a great job flying the planned trajectory, and he monitored the energy altitude predictor, an instrument that predicted how high SpaceShipOne would go once the rocket engine was shut down.

"You may be at 160,000 feet [48,770 meters]," Melvill said, "and it will say, if you turn it off right now, you'll go all the way to 328,000 feet [100,000 kilometers]. So, you watch that instrument. That's the primary instrument to know when to turn it off. Initially, we did it with a timer, and we just said you're going to run 55 seconds. And at the end of 55 seconds, we'd shut it off."

But only 60 seconds after lighting the rocket engine, traveling at Mach 2.7, SpaceShipOne was in trouble. The crowd hushed as the contrail from SpaceShipOne switched from a nice, smooth line to a wild corkscrew in the sky. Things happened fast. But from the angle of the shot displayed on the jumbo screen, it was hard to tell what was actually happening.

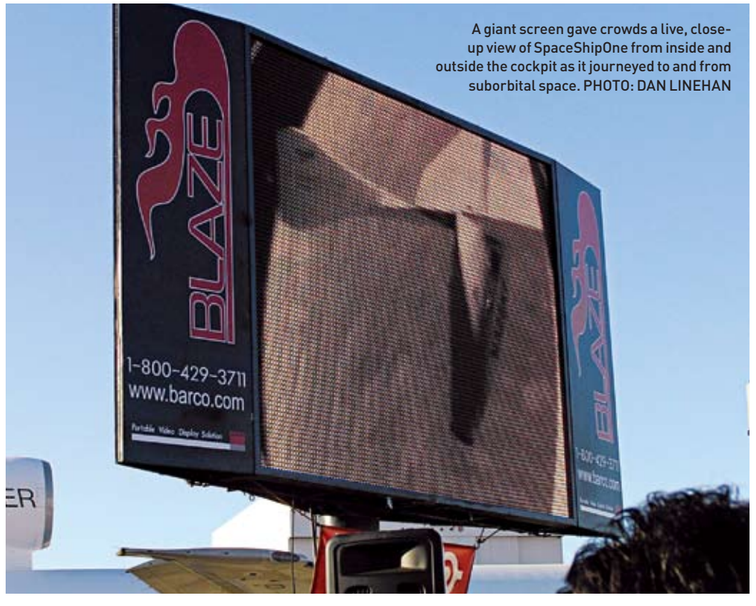
"When he started doing the rolls, I thought he was dead," recalled Erik Lindbergh. "I thought that was it—the craft was going to break up and he was done."

Thousands of people were gripped in silence.

"I didn't think he was doing rolls. I thought he was tumbling at that point," Lindbergh recalled.

SpaceShipOne rolled right uncontrollably at an initial rate of 190 degrees per second, spiraling up toward space.

"I had one of the walkie-talkies, and I could hear Melvill talking to ground control," Ansari said. "He said that everything is fine. It didn't look fine. But because he was convinced that everything was fine, I felt comfortable."



A giant screen gave crowds a live, close-up view of SpaceShipOne from inside and outside the cockpit as it journeyed to and from suborbital space. PHOTO: DAN LINEHAN


Brian Binnie celebrates SpaceShipOne's (and his own) extraordinary achievement. PHOTO: X PRIZE FOUNDATION

The rocket engine kept burning while SpaceShipOne still spun its way up, reaching a maximum speed of Mach 2.92 (2,110 miles per hour or 3,400 kilometers per hour). Melvill still kept his eye on the energy altitude predictor. As he explained, "Unless you see 328,000 feet [100,000 meters] in that window, you are not going to win the X Prize. So, you don't want to turn it off until you read at least that much or more. And so that was why I didn't turn it off when we were doing all those rolls, because it didn't say 328,000 feet [100,000 meters] yet. I went to turn it off thinking, wow, something was wrong here. And when I looked at the energy height predictor, it was not predicting that we would go high enough. So, I just left the motor running and just ignored the rolling."

At a total burn time of 77 seconds, Melvill finally shut off the rocket engine. His altitude was 180,000 feet (54,860 meters) at that point and only about halfway through its ascent. But as Melvill got higher and higher, the air became too thin for him to counteract the rolls with either the subsonic or supersonic flight controls. SpaceShipOne left the atmosphere still rolling at 140 degrees per second.

Melvill was able to keep from being disoriented by focusing on the Tier One Navigation Unit and not glancing out the windows. He activated the feather and then focused on nulling-out the rolls with the reaction control system. "I just pushed it on, turned on both systems, and just left it on until it stopped it," Melvill said.

By the time SpaceShipOne stopped rolling, it had completed 29 rolls. The vehicle now continued to coast to an apogee of 337,700 feet (102,900 meters), but now Melvill could enjoy the 3.5 minutes of weightlessness and the view while still having time to take a few photos out the window.

On reentry, SpaceShipOne hit a top speed of Mach 3. Still in the feathered configuration, it decelerated from supersonic to subsonic, while it reached a peak g-force of 5.1 g's at 105,000 feet (32,000 meters).

At 61,000 feet (18,590 meters), Melvill retracted the feather to begin his glide back to Mojave. As SpaceShipOne descended, the chase planes caught up and tucked in behind.

During the 18-minute glide to Mojave, SpaceShipOne suddenly rolled completely around, surprising the chase planes. But this roll wasn't uncommanded. Melvill preformed a victory roll, rounding out his total rolls for the flight at 30.

"It was fabulous—it really was—knowing that we at least were halfway there. We went plenty high. And coming back and all the excitement, everybody was just thrilled to death," Melvill said.

Melvill's flight exceeded the altitude requirement by nearly 10,000 feet (3,050 meters) and satisfied the other rules set by the Ansari X Prize. To fulfill the remaining conditions, SpaceShipOne had to repeat the spaceflight within two weeks.

"We knew what we had to do. My task was to not damage the airplane. I wasn't going to go for any altitude records but just plenty of margin and burn the engine as little as possible and land the airplane as smooth as possible so we didn't have to fix anything. We didn't even change the tires. We refueled it, and it was ready to go. We could have gone the next day," Melvill said.

TURNAROUND TIME

The 29 rolls not only caused great concern for safety, but now doubt and skepticism started to creep into the back of people's minds. One or two rolls wouldn't have been so dramatic, and would not have left such a vivid impression. But with 29, even the most inexperienced spectator could tell things weren't going as planned. The public had not yet bought into the whole idea of personal space travel. There was a big difference between being enthusiastic and thinking something was cool and being willing to put your own butt in the seat strapped to a rocket engine. Some people would of course be willing to take any risk to get into space. But that certainly wouldn't be the best way to jumpstart an industry in this day and age. Sometimes perception, unfortunately, weighed heavier than fact.

"We saw this rolling departure, and that was cause for concern," Binnie said. "Not from a safety or structural standpoint but a concern of perception. Others thought, 'Well, they are just loose cannons out there. They don't understand what they are doing. They are certainly not ready for prime time or carrying the trusting public.' And so the clock is ticking."

"We had planned this," he continued, "to where we could potentially pull off three flights in two weeks if need be. But we were all getting kind of tired. We really didn't want to have a problem on our second attempt. Everybody on the team was well aware of what was at stake and what would all be necessary should it have to come to a third flight. And any number of things could put us there. It could be bad weather, an avionics hiccup, range issues, telemetry things, and issues totally unrelated to flying the vehicle could have scuttled that event and forced us into a third evolution."

The fact was that after evaluating the data from X1, the team determined Melvill had done too good of a job at pointing SpaceShipOne straight up. In this orientation, SpaceShipOne had no aerodynamic lift to correct unwanted motion. "You've got to be careful that you don't go over on your back," Melvill said. "It is real easy to pull so hard that you end up overturning."

With the nose of SpaceShipOne pointed straight up, a degree or two off one way or the other was not much of a change in angle. But it turned out

to be a tremendous change in terms of SpaceShipOne's stability. So, when Melvill went beyond 90 degrees, he naturally tried to bring the nose back on track. This caused the angle of attack, the direction SpaceShipOne was pointing in relation to the direction of actual motion, to go to zero.

"The wing wasn't lifting anymore, there was zero lift on the wing, then it departed," Melvill explained. "It did a snap roll. And that was caused by the design of the airplane. The airplane was designed with a high wing and swept leading edge. Had that been a low wing, it would not have done what it did. We learned that lesson. On the next flight, we didn't change the airplane at all. We just changed the pull-up schedule."

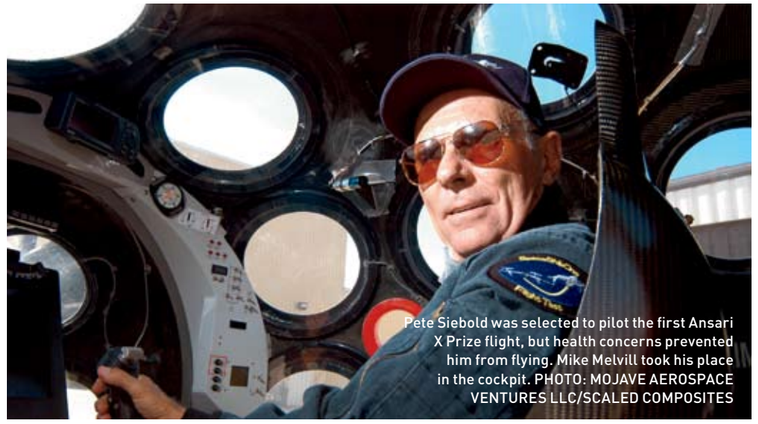
The new plan for the trajectory was a more gradual pull-up during boost while making sure to never go to vertical. "And as long as that wing is lifting, it won't stall like that. But when it gets to zero lift, then you get separation on it, and the slightest little perturbation of the airplane will cause it roll or do something odd," Melvill said.

None of the flights previous to X1 had flown at high Mach numbers while at a zero angle of attack. Essentially, SpaceShipOne lost directional stability, so there was no way Melvill could counteract the weak thrust asymmetry, a wandering thrust line, coming from the rocket engine at the time. SpaceShipOne was still rocketing up, so by the time the first few rolls occurred, the atmosphere had disappeared. Aerodynamic forces were not longer causing the rolls, but since there was no air pressure to resist the rolling motion, once SpaceShipOne started to roll, it just kept going and going.

The structural loading on SpaceShipOne from the rolling was very low. Melvill's safety was never in jeopardy, only his breakfast, which thanks to all of the unusual-attitude training in the Extra 300 aerobatic plane, remained in place. The very next day, Scaled Composites not only figured out what caused the rolling departure but also determined a way to avoid it from happening again.

As with the first rocket-powered launch of SpaceShipOne, Rutan wanted to fly on a significant day in aviation history. The anniversary of the first man-made object to orbit Earth was approaching. Russia's Sputnik was launched on October 4, 1957, and circled Earth about 1,400 times at a peak apogee of 588 miles (947 kilometers). This milestone of spaceflight sent the space programs of the United States and the USSR into warp speed.

"We had three days to finesse this in the simulator," Binnie said. "Between Mike's flight and the final flight, it was Friday, Saturday, Sunday. It looked promising, but it was still only our sixth powered flight in the vehicle. There was no guarantee that we really understood it or that there weren't some other gremlins that were going to leap out and get us."



Pete Siebold was selected to pilot the first Ansari X Prize flight, but health concerns prevented him from flying. Mike Melvill took his place in the cockpit. PHOTO: MOJAVE AEROSPACE VENTURES LLC/SCALED COMPOSITES

On this day, the 47th anniversary of Sputnik, Brian Binnie was selected to pilot SpaceShipOne for the second of the two flights required to win the Ansari X Prize. Melvill, who had been a backbone of the program, had paved the way for Binnie only five days earlier. Melvill would now be there flying White Knight along with Matt Stinemetze as flight engineer.

"He dropped me, and I dropped him," Melvill said. "That was fun."

White Knight and SpaceShipOne lifted off together at 6:49 a.m. PST on October 4, 2004, in the chill of the desert morning with the Sun rising. In an article Binnie wrote for *Air & Space*, he echoed the thoughts of Melvill, "The program to develop and test Burt Rutan's SpaceShipOne (SS1) had many different demands, but I can safely say the one that made the pilots uniformly uncomfortable was the hour-long wait in SS1 while the White Knight carrier aircraft dragged it up to release altitude. During this time, there is little to do and the mind is somewhat free to wander."

As the world watched, the pressure on Binnie was enormous. With the prize of $10 million on the line, Branson waiting down below poised to begin work on SpaceShipTwo, and the fact that it was 10 months since the last time he flew SpaceShipOne, which resulted in a crash landing, Binnie had plenty to wrestle with inside his head. "For me personally, a problem or failure or inability to not pull this off for whatever reason, the other side of that coin was a bottomless pit. It felt to me like an abyss."

Tensions ran high on the ground, too. "I knew that if there would be any glitches, people would say that this is not ready for prime time," Ansari said. "And it's not ready for commercialization and all these things."

But when it came time to launch, every trace of doubt or uncertainty disappeared with the first flash of the rocket engine. Binnie's years of Navy flying and skills as test pilot took control. At 7:49 a.m., an hour after takeoff, and 47,100 feet (14,360 meters), Stinemetze pulled the lever to drop SpaceShipOne.

"We had no reason to delay," Binnie said. "So, as soon as I was separated, I armed and fired the rocket motor."

Ignition occurred immediately, and off Binnie went. SpaceShipOne zoomed past White Knight close enough for Melvill and Stinemetze to hear the hybrid rocket engine, a spaceman's version of buzzing the tower. After 10–12 seconds, Binnie was thinking, "Okay, I'm still alive. I'm still in the loop. I'm still managing this thing." But as SpaceShipOne transitioned into supersonic flight, he relaxed. The hardest part was over.

"We wanted to get to the X Prize altitude and a secondary goal of trying to beat the X-15 record," Binnie said. "So, we wanted lots of altitude. But we also wanted to exit the atmosphere without any rolls or gyrations or large body rates so that we didn't scare off Branson and the whole SpaceShipTwo efforts. There was that dual-edge sword of precision flying on one side and performance on the other.

"We wanted to get the nose up to 60 to 70 degrees as quickly as we could, initially, a very aggressive turn," Binnie continued. "Once we got there, we started slowing down the pitch rate on the vehicle so that we went from 60 degrees to about 80 to 82 degrees over the next 50 seconds or so. The bulk of the flight was just milking the nose between those pitch attitudes. And then the last 20 to 25 seconds was the start of a pull again to get to about 87 to 88 degrees nose up."

Binnie continued, "The initial pitch attitude to 60 to 65 degrees meant you were going to take advantage of all that rocket motor energy that is available to you and convert that to altitude. And the pull-in endgame meant you were keeping angle of attack on the vehicle and making it less susceptible to rocket-motor asymmetry in the thin upper atmosphere, where you have a delicate balance between controlling those asymmetries with little aerodynamic control power to resist it."

After 84 seconds, Binnie shut down the rocket engine when SpaceShipOne had reached 213,000 feet (64,920 meters), zipping upward as fast as Mach 3.09 (2,186 miles per hour or 3,518 kilometers per hour). Like a pot of gold at the end of a rainbow, $10 million waited at the other end of the ballistic arc.

"I went scooting right through the X Prize altitude and past the X-15 old record by 13,000 feet [3,960 meters] or so. I got to the point after rocket motor shutdown and the feather coming up, and I hadn't touched any of the reaction control system yet to control body rates. The vehicle was just absolutely stable. I actually used reaction control to give myself a different view so I could take some pictures."

Binnie reached an apogee of 367,500 feet (112,000 meters), which exceeded the Ansari X Prize requirements by nearly 7.5 miles (12 kilometers), and experienced weightlessness for about 3.5 minutes. Besides taking photos he had the chance to do some zero-g testing on a miniature SpaceShipOne. Binnie did not release M&Ms in space as did Melvill, and it's still unconfirmed whether Binnie ate his allotment during the captive-carry phase. Doug Shane would not speculate on the origin of several faint crackling sounds heard over the Mission Control radio.

Although weightless at apogee, SpaceShipOne had not truly escaped Earth's pull. SpaceShipOne started to freefall and began to accelerate, reaching Mach 3.25, which was the fastest speed it had ever reached on any of the flights. As SpaceShipOne descended into the thick atmosphere, air friction now decelerated it, and at 105,000 feet (32,000 meters), Binnie faced a peak force of 5.4 g's pushing against his body.

As the g-forces subsided and SpaceShipOne slowed down below the speed of sound, Binnie retracted the feather at an altitude of 51,000 feet (15,540 meters). After reentry into Earth's atmosphere, the feather had done its job. The pair of pneumatic actuators, which can be seen connecting either side of the fuselage to the trailing edge of the wings, pulled downward. This caused the feather to retract, making SpaceShipOne streamlined once more and readying it for the glide back to Mojave.

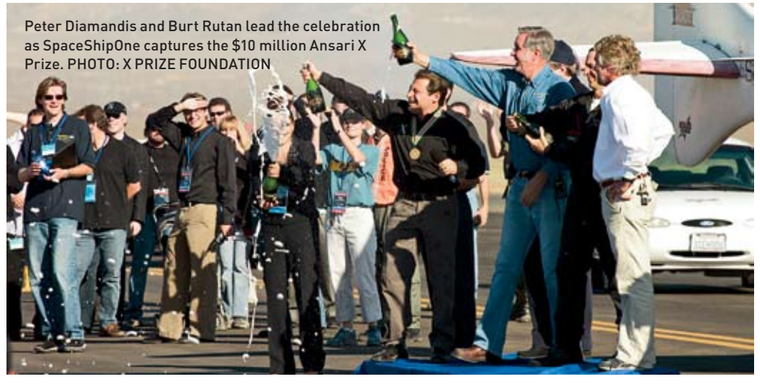
The world watched SpaceShipOne gliding down for 18 minutes.

"I don't know," Ansari said, "maybe naively, I just felt that there was no more danger and everything would be fine or if there were any glitches or problems, they would be very much manageable. I wasn't too worried because I had watched landings of SpaceShipOne a few times before."

After only 24 minutes from being dropped by White Knight, SpaceShipOne's wheels hit the runway for a perfect landing.

"Oh, it was absolutely wonderful," said the 434th human to reach space, summing up his spaceflight.

Once the nose skid brought SpaceShipOne to a stop and the door popped open, Binnie was instantly welcomed back by his wife as Rutan, Allen, and Branson congratulated him on the victorious flight. Towed by a pickup truck, SpaceShipOne paraded up and down the flightline in front of the thousands and thousands of cheering supporters as Binnie stood triumphantly atop while holding the American flag.



Peter Diamandis and Burt Rutan lead the celebration as SpaceShipOne captures the $10 million Ansari X Prize. PHOTO: X PRIZE FOUNDATION

"The whole experience was very emotional for me," Ansari said. "Even though I had nothing to do with the design and the hard work that the engineers and the team had put into building SpaceShipOne, I just felt like part of the team. I was just so proud and happy that they were successful, and that was the greatest joy to see that happen."

Eight years after it was announced, the Ansari X Prize was finally captured, just like the Orteig Prize, first offered in 1919 and claimed in 1927. The difference was that aviation would not just take a giant leap into the air but would leap past where the air was thin to the beginning of space.

"It was just a feeling of relief that everything had worked flawlessly," Paul Allen recalled. "A mix of elation and relief I think is what I described at the time. And you are proud for Burt and his team. In the back of your mind you are thinking like maybe this does open the door for a lot of possibilities in the future in terms of private space tourism. I was just very excited and relieved, just an amazing mixture of emotions."

With the Ansari X Prize awarded, commercial space travel officially launched off. Diamandis's vision of a new way of thinking about space flight became reality, and Rutan with his team from Scaled Composites provided the way. Eight years was a long race, but the accomplishments during this time frame far outreached what was once thought possible.

The will was now strong enough to overcome the energy barrier to space, much the way the mystical sound barrier was broken in the 1940s to usher in supersonic flight. Paul Allen saw to it that Burt Rutan would have the chance to show his stuff and prove to the world that the impossible wasn't impossible. And Brian Binnie's perfect performance flying SpaceShipOne, gave all the reason to Sir Richard Branson and his newly formed Virgin Galactic that commercial space travel was right.

"Burt has the world's greatest garage," Paul Allen said. "We built a rocket in the world's greatest garage, and we actually got into space and back, and everybody was safe. And it won a prize. It is hard to explain the excitement of that. And the crowds being there celebrating that with you was just amazing." +

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