

# Launch of SpaceShipOne

by

**Matthew A. Nelson**

**September 29, 2004**



SpaceShipOne and Pilot Mike Melvill

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### **Prelude**

Sometime in the 1996 timeframe, the \$10-Million X-Prize was announced by the founders, Anousheh Ansari and Peter Diamandis, to be awarded to the first commercial company that would successfully launch a spacecraft capable of carrying three people into the sub-orbital area of space (internationally defined to be a height of as 100 kilometers above the surface of Earth) and repeat the task within two weeks of the landing time of the first spacecraft. Twenty-seven companies around the world entered into the competition; the leading contender was Scaled Composites, a company formed by legendary aircraft designer Burt Rutan, which had entered into a joint venture with Microsoft co-founder Paul Allen called Mojave Aerospace Ventures.

On June 21, 2004, SpaceShipOne, piloted by Mike Melvill, was taken up to an altitude of around 45,000 feet on the mothership, the White Knight, released, ignited its rocket engine, and soared past the 100-km mark and into history as the first non-government sponsored rocket to do so. Both SpaceShipOne and the White Knight are Rutan's design; both have identical cockpits. I could have been at Mojave watching this historic event, and I wasn't. I even had airline tickets to fly from Houston to Los Angeles four days later. I chided myself for not paying the \$100 ticket change fee that the airlines steal from its customers who make changes in their tickets.

The June flight was a test flight; the X-Prize was still up for grabs. In late July, Scaled Composites announced that they would try for the first of two official flights for the prize on September 29<sup>th</sup>. My wife Karoline and I had a driving trip planned to Seattle leaving on September 24<sup>th</sup>; I had not planned on going through California, but after hearing the announcement, immediately made plans to do so and reserved a room at the OXFORD Inn & Suites in Lancaster, located about 25 miles from Mojave.

### **September 29, 2004**

(Written the same night)

Woke up 2 am, left Lancaster shortly afterwards. Drove to Mojave Airport, arrived about 2:30, the guards opened the parking area early, and I was 10th to park. Set up "camp" right next to the flight line. Met Joe Clark, who works for Scaled Composites as a Composite Fabricator. He told me the frequency of the Mojave tower and the company frequency so I could listen with my handheld

radio to the air/ground between the pilots of SpaceShipOne and the White Knight, and the mission control van. I told Joe that had I stayed in Southern California, I very well might have been working in that van. They even have a tracking antenna, so I think I would have been right at home.

One vendor wanted to sell me coffee at \$2.50 a cup. I declined, because even though I wanted some coffee, I couldn't justify that much money. Shortly afterwards, another vendor let me buy some at \$1.00 a cup. The people selling it were donating all proceeds to charity, and were also selling official SpaceShipOne souvenirs that included a coffee mug that I had to break in. I couldn't help but buy a polo shirt, patches, and hatpins. Imagine me buying a hatpin!

One guy standing next to me had been a candidate for a payload specialist around the time of the Challenger space shuttle accident; after that, NASA pretty much decided against taking up Payload Specialists. John Glenn was a notable exception. Payload Specialists weren't required to have as much training and they were generally employed by other entities besides NASA, such as a university, the Canadian Space Agency, or a commercial company such as Lockheed Martin.



White Knight / SpaceShipOne taxiing out (#1)

Except for actually being in the cockpit of the spaceship, or perhaps in the mission control van, there was not other place in the world that I wanted to be this morning. Launch Fever infected the crowd. People are there to see the historic event - no one bothers anyone else's cameras or camping chairs or

anything else. A couple of times I left my things with complete strangers. Three hours of darkness passed quickly; I was glad that I wore my leather flight jacket with all of its patches to keep the chill off. I hung my handheld aircraft radio on a flight line fencepost and the people around me heard the tower clear the White Knight / SpaceShipOne for takeoff, which occurred about 20 minutes later than the 6:47 AM scheduled time. Naturally, we all cheered as they taxied by us and took off a few minutes later.



White Knight / SpaceShipOne taxiing out (#2)



Take-off roll of White Knight and SpaceShipOne

Hopefully, the photographs I took of the aircraft/spacecraft taxiing and taking off will come out. My excitement meter pegged to the same point on the "WOW!" scale as when I have seen space shuttle or Russian Soyuz launches.

Shortly afterwards, the chase plane lifted off, which looks like it may be a derivative of Rutan's Long Easy.



Upper: White Knight

Left: Contrails left as SpaceShipOne heads towards space

Against a clear blue sky, the two white aircraft could be clearly seen for quite awhile as they climbed to approximately 47,000 feet and circled within the general vicinity of the Mojave Airport. By having my radio tuned to their frequency, we were able to hear the conversations between SpaceShipOne and its mission control. There were loud speakers nearby, but the announcer couldn't clearly be understood. It took an hour to reach the proper altitude before SpaceShipOne released from the White Knight and fired off its hybrid solid rocket with an oxidizer of liquid nitrous oxide powered engine built by SpaceDev. I missed seeing the burn, but finally spotted the contrail. During the 77-second burn I noticed several loops in the contrail, but thought nothing of it. I had not heard every word spoken on the radio between the mission control and SpaceShipOne. Later, after returning to Lancaster, I found out that there was concern by Burt Rutan that the mission might have to be terminated, but pilot Mike Melvill took it on up. After landing he laughingly said that a good pilot always does victory rolls at air shows, and he had done another one at apogee. He went on to explain that with everything going on in the spacecraft and with his hands, feet, and eyes extremely busy, he may have been using a little too much right rudder. On this evening's news, the media called it a white-knuckle ride, but after listening to Mike speaking post landing at Mojave, he took it all in stride as the experienced professional test pilot that he is. I certainly did not detect any fear in his voice during the mission. In fact, what I heard bordered on elation!

We heard the release countdown, and once Mike made it to the recognized boundary of space at 100 kilometers, he announced that he

reached 338,000 feet (103 km). Post flight, he said he could have burned his engine about 11 seconds longer, but the goal of the mission was just to reach space. For the next flight, Mike said that they would change out the engine, fill it with gas, and go again. Apparently in the trial mission on June 21st, Mike had played with M & Ms. When asked if he did it again, he said that he was too busy taking photographs of the earth below.

Since this launch was the first of two within two weeks required by the X-Prize Foundation to award the \$10 Million, on the way down Mike called out on the radio, "We just won Five Million Dollars!" Although it took an hour to climb to 47000 feet, and 77 seconds to go to space, SpaceShipOne dropped like a rock to 80,000 feet almost as quickly. About another 15 - 20 minutes later, we could see the White Knight, SpaceShipOne, the chase plane, and two others flying overhead in formation. Mike skillfully piloted SpaceShipOne down to what looked like a flawless landing. I wish my landings coming down from 1500 feet were as smooth as his are from 100 kilometers. Soon afterwards, the White Knight buzzed the crowd. No one complained!



Chase aircraft; note SpaceShipOne in upper photo on right hand side



Landing of SpaceShipOne

The announcer said during the post landing ceremony that Mojave is not only an airport, but is now a spaceport. Briefly, he said something about Virgin Galactic president Sir Richard Branson signing a deal with Scaled Composites to build five space vehicles. These are to be modeled after SpaceShipOne, capable of carrying five passengers to space, at an estimated cost of \$190,000 each. As much as I would like to go, I don't think I can quite afford that much.



Pilot Mike Melvill on his victory ride after taking SpaceShipOne into space.  
Whose is that old guy with all the hatpins, still dreaming of going into space?

Thirty minutes later, a pickup truck towed SpaceShipOne down the taxiway, past the anxious crowds. Mike stood on top, waving. When he went by me, I asked one of my co-watchers to take my photo when the spacecraft went by. Hope it turns out. I stayed long enough to watch him go both directions. When he went by the second time, I yelled out, "Congratulations!" He responded with a "Thank you." After the crowd dispersed, Joe Clark told me he would try and obtain an autographed photo for me. Thank you. Quite a day in space history.

**Epilog:**

On October 4, 2004, the 47<sup>th</sup> anniversary of the launch of Sputnik 1, former Navy pilot Brian Binnie piloted SpaceShipOne to 367,463 feet (112 km), letting the engine burn a few additional seconds longer than what Mike Melville did a few days earlier, and winning the \$10-Million X-Prize for Scaled Composites and Mojave Aerospace Ventures. Once more, congratulations to all involved for a job well done. I have heard that a \$50-Million prize is now being offered for the first commercial company to take people to orbit (but I think the people making the offer are not the same ones that offered the X-Prize). Go for it! Maybe that will be my ride to space, if I can figure out how to pay for it!