

By Carmen Felix

To the Stratos and Beyond Interview with Felix Baumgartner

On October 14th 2012, Felix Baumgartner became the first human to break the sound barrier during a free-fall from an altitude of 39 km. Space Safety Magazine contacted him to learn more about the safety aspects of a project that has changed the perception of what is possible in terms of crew escape and rescue.

A Dream to See the World from Above

Space Safety Magazine: You became the skydiver to achieve the highest parachute jump and the first human to break the sound barrier outside a vehicle. Is this something you anticipated when you began skydiving?

“I didn’t know whether I’d broken the sound barrier until I landed,”

Felix Baumgartner: From the time I was a child, I wanted to see the world from above. My grandmother gave me a coin commemorating the Moon landing when I was just a little boy, and men like Neil Armstrong and Joe Kittinger were my heroes. My biggest personal dreams were to be a skydiver and to fly helicopters, and I made my first skydive as soon as I was legally old enough: age 16 in Austria. Setting a new altitude record was always in the back of my mind, but it took 20 years of progressively more difficult challenges to be ready for the mission we completed on October 14.

SSM: What was your personal involvement in the design of your spacesuit for this mission?

FB: The suit was custom-tailored to my measurements, and I personally went to David Clark Company for fittings and to discuss what was needed – especially the mobility necessary for skydiving. Then once a prototype suit was created I provided feedback, and throughout our testing and training I continued to give my input on all the equipment I wore. For example: it wasn’t possible to look up to see my parachute lines in the helmet, so we added mirrors to the gloves. And, just the opposite, it was difficult to look down and see a landing site over my chest pack, so the team equipped the chest pack with a release I could use to swing it out of the way at low altitudes. Adjustments that may seem like ▶▶



Felix jumps into the void from an altitude of 39km. About 40s later, Felix became the first human to break the sound barrier in freefall.

Credits: Red Bull Content Pool



Baumgartner sits in his capsule during preparations for the final Red Bull Stratos flight. – Credits: Jörg Mitter/Red Bull Content Pool

“We all wanted the jump to succeed, but we also agreed that the risk had to be acceptable,”

fine-tuning can make a big difference when you're in the air.

SSM: While we are waiting for the data to be published, what can you report about your personal experience of the transition to supersonic speed? What was different with respect to an ordinary high velocity free-fall?

FB: I couldn't sense how fast I was going – there aren't any visual markers in the sky to give your brain a point of reference. And I didn't know whether I'd broken the sound barrier until I landed and the crews told me that they'd heard my sonic boom. But what was different from other free-falls was how long a period I fell (and accelerated) with no control because the air was so thin. The air wasn't dense enough to work against, so it felt like a very long time before I could use my skydiving skills to stabilize myself.

Fortunately, I had trained hard for just such a situation. The team had always warned me that I could spin, and my test jumps from 71,581 feet (about 21,800m) in March and 97,145.7 feet (29,610m) in July gave me a taste of what a free-fall in a near vacuum would be like.

SSM: One of the risks and possible scenarios that did not occur during the actual jump was falling unconscious. How was the team prepared to address this problem?

FB: My parachute rig included a drogue stabilization parachute that would have deployed if I had experienced 3.5Gs for six continuous seconds. And my reserve parachute was equipped with a CYPRES automatic activation device that would have fired if necessary as I approached the ground. Finally, the medical team had established clear protocols on how to

treat me if I had landed in an unconscious state. Every contingency was well thought out.

An Acceptable Risk

SSM: During the jump, you reported to the ground that the visor was not working properly and you were experiencing fogging. Luckily, you retained some visibility, but what would have happened if you'd been completely blind?

FB: It was built into our protocols that if I couldn't see, I couldn't jump – I would have had to come down in the capsule, because I needed to be able to see the horizon to stabilize myself. However, even if I had jumped and then fogged or iced over, the automatic deployment devices in my parachute rig would have protected me – but it would have been much more difficult to stop my spin or have a perfect landing.

SSM: Issues like heating and communication that occurred during your ascent could have resulted in a ▶▶

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decision to abort the mission. What was your position regarding that and what drove the decision to continue?

FB: Because this was a well-planned flight test program, we had carefully crafted our procedures so that we knew what to do if difficulties arose. Naturally we all wanted the jump to succeed, but we also agreed that the risk had to be acceptable. Ultimately, whether or not to jump was my call. Working with Mission Control enabled me to troubleshoot and consider the risks, and I decided to go ahead with the jump.

Looking Beyond Stratos

SSM: What is the legacy of Project Stratos? What are the major outcomes of this endeavor for science and future technologies?

FB: It's hard to sum up the results of Red Bull Stratos in a few sentences. I think most members of our team would say the biggest impact was proving that a human being could successfully pass through the transonic zone and break the speed of sound in freefall. There were a lot of people – even experts – who doubted it, and hopefully the dynamics of that experience will point toward solutions for high-altitude bailout in emergencies.

In terms of equipment, I understand that organizations throughout the aerospace industry are interested in the modifications made to my pressure suit and parachute rig to facilitate a high-altitude, high-speed parachute jump. I think we made some true advances there. This mission also brought together an incredible medical team whose collaboration has resulted in new protocols and procedures that could save lives. Throughout the entire five years of program development, we were learning. Now the team is going to be sharing their insights and findings to benefit programs on the horizon.

It's exciting to see just how much the jump has inspired kids around the world, too. If Red Bull Stratos has helped spark young people to take an

interest in science, or to follow their dreams in other ways, that's a legacy to be proud of.

SSM: Will you do it again?

FB: This project was very fulfilling, and I'm happy that we were able to gather even more data than we had originally anticipated to further advancements in aerospace safety. I feel like we accomplished what we set out to do, and

now it's time for me to move to other challenges. I hope that the next generation can take what we learned and expand on it.

SSM: What is next for you?

FB: I've probably gone as far as I can go with parachuting, but I still love that feeling of seeing the world from above, and I'm the kind of person who is always looking to take my skills to the next level. I'm ready to pursue my other passion – that second dream I've had since I was a kid, flying helicopters. I have already been flying as a commercial helicopter pilot, and now that I have more time I'm really looking forward to flying in ways that will be useful, like piloting mountain rescues.



Baumgartner celebrates the successful completion of his record breaking jump.

Credits: Predrag Vuckovic/Red Bull Content Pool