

## Spaceport Sweden - The First European Spaceport ready for Business.

(Kiruna, Jan 2009) „**We could operate anytime**“ said Olle Norberg (Chairman of Spaceport Sweden, SSC) in a recent interview.



The right picture shows the take-off of White Knight-2 on 21st December 2008 for its first test flight

Sweden is the first European commercial spaceport and second worldwide, besides the new US Spaceport being under construction in New Mexico.

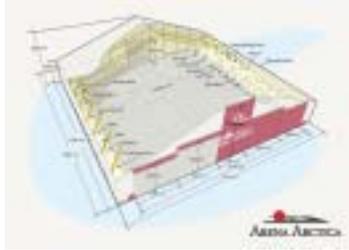
Already in January 2007 Spaceport Sweden signed an agreement with Virgin Galactic for an assessment study for performing flights of SpaceShip-2 (SS-2) from Kiruna capitalizing on the existing airport and sounding rocket launch base facilities, know-how and the associated expertise of several Kiruna-based Swedish companies.

Spaceport Sweden is a co-operation between Esrange Space Center owned by **the Swedish Space Corporation (SSC)**, the famous **ICEHOTEL**, Kiruna Airport owned by **the LfV Group** and Kiruna's business-development company **Progressum**.

The facilities to be used comprise:

### [Arena Arctica](#)





Easily accessible, only nine kilometers from central Kiruna, this large hangar at Kiruna airport offers storage and testing space for all forms of aircraft. Kiruna can offer free airspace with a minimal amount of commercial airline traffic over an area equivalent to about an eighth of Sweden's total land area.

### Esrange Space Center

The long and successful history of Esrange Space Center has allowed SSC to build up a comprehensive infrastructure to support aerospace operations; the world's busiest groundstation for satellite control and operations, rocket launchers, a very large balloon pad, a ground based instrumentation site, aerospace vehicle testing equipment and service systems as well as a hotel, canteen facilities and fully equipped laboratories and offices for customers.

### ICEHOTEL

On the road between Esrange and the airport, ICEHOTEL appears like an ice dome in the winter landscape, offering its guests comfortable accommodation and uncompromised service. Just spending the night in a palace of ice and snow is an adventure in itself. The modern Scandinavian style hotel cabins are cozy, offering everything you need right outside your cabin door. Your time spent here can be an adventure, a time for complete relaxation, or a combination of both.

On 4<sup>th</sup> October 2004 Burt Rutan and his team at Scaled Composites won the 10 Mio \$ Ansari X-Price prize with SpaceShip-1 (SS-1). SS-1 was carried by White Knight-1 (WK-1) to an altitude of 12 km two times within two weeks enabling SS-1 to reach an altitude of more than 100 km on a boosted trajectory fulfilling the X-Price conditions.

With the most recent, December 21<sup>st</sup> 2008 successful maiden flight of White Knight-2 (WK-2) the carrier of the larger SpaceShip-2 (SS-2) Burt Rutan and Scaled Composites are quite on schedule to deliver WK-2 and SS-2 to Richard Branson (Virgin Galactic) to start the first commercial suborbital flights by 2012 on a regular basis.

It is planned to use SS-2 to carry 6 persons up to an altitude of 120 km on a 2 hrs roundtrip with a period of 4 min total weightlessness which would entitle the passengers to claim an "Astronaut"-status for a ticket price of 200,000 US \$ each – all inclusive. The next steps would be flights with a scientific objective, suborbital point-to-point flights and finally performing orbital missions.

**SpaceOps News (SoN)** had the opportunity to ponder some operational questions with Spaceport Sweden's officials **Olle Norberg (ONO)** and **Johanna Bergström-Ross (JBR)** – Information Manager SSC, with references to Virgin Galactic's home page (**VG**).

**SoN:** How did the arrangement with Virgin Galactic come about?

**JBR:** We contacted Virgin Galactic early in 2006 to invite them over to Kiruna and see what we had to offer. Their site visit convinced them that Spaceport Sweden was a perfect complement to the site that they were looking at in New Mexico. Kiruna is a space and tourism city since many years so for us this is a most natural step to take.

**SoN:** How many flights per year would you expect for a commercial "break-even" point?

**JBR:** For us the infrastructure is more or less already in place so we do not need to make large investments to get started. As a matter of fact we are open for business at this very moment.

**SoN:** The current ticket price amounts to approximately 200.000 US \$. How much time must a customer spend to prepare for and participate in the flight and what mandatory/optional features would the total flight package include?

**VG:** There will be 3 days of pre-flight preparation, bonding and training onsite at the Spaceport. (Reference: <http://www.virgingalactic.com>)

**SoN:** EADS at Bremen, Germany just “shelved” its own concept for a suborbital one-stage vehicle because of “lack of interest”. Did you have contacts with EADS?

**JBR:** Yes, this is a small world so we talk to everyone.

**SoN:** One of the existing airport assets you are offering is the Arena Artica with a hangar space of 5.000 m<sup>2</sup> operating at +18 C for outside temperatures of -20 C and below. Do you expect any modifications of the hangar for commercial suborbital flights with respect to passenger handling and/or for flight monitoring and control activities.

**JBR:** We are definitely going to modify Kiruna Airport so that it suits space travel better. For the moment a master plan for the airport is taking shape and it will be ready early next year.

**SoN:** Do you need special preparations for security and/or flight emergencies at the SpacePort?

**ONO:** Most of the preparations are similar to ordinary jet operations, but we will need to work with Virgin Galactic on the special requirements for handling and fueling the rocket engine. We are also working with the air traffic controllers to develop the routine and contingency operations for these flights.

**SoN:** Are you planning to augment the existing airport operations personnel?

**ONO:** This will depend on the handling requirements, initially we intend to work very closely with the Virgin Galactic and Scaled Composites staff.

**SoN:** Do you foresee a back-up landing option?

**ONO:** There are several alternate airport landing options. When the spaceship is ready to be released we will have full access to the runway at Spaceport Sweden.

**SoN:** ESA recognizes the private sector’s efforts on space tourism and intends to provide the necessary environment for this industry to flourish, e.g., setting up the legal framework for operations across Europe or for astronaut training and space medicine. Are you planning to consult with ESA?

**ONO:** Absolutely. We very much welcome ESA’s positive position to commercial spaceflight.

**SoN:** How do you see the interface between the regular airport traffic and the suborbital flights. Of course at the beginning this would be easy to coordinate e.g., similar to the coordination of sounding rocket campaigns. However we understand that the clearance with the authorities is not defined yet. NASA established the Advanced Range Technologies Working Group (ARTWG) and Advanced Spaceport Technologies working Group (ASTWG) interacting with the Future Interagency Range and Spaceport Technologies Program (FIRST). Are you participating in those activities?

**ONO:** We have a very good dialogue with the Swedish authorities and also the Federal Aviation Authority in the USA. Having launched suborbital rockets, albeit unmanned, for the last 42 years have provided us with a good know-how on how to safely perform launch operations in harmony with ordinary aviation. We have also used US flight hardware, which may be under ITAR restrictions, for decades. It is of course a strength to know how to work with authorities on such matters too.

**SoN:** It is assumed that after the successful completion of suborbital flights Spaceport Sweden would support point-to-point flights for high-speed transportation as well. What flight destinations or origins would you see?

**JBR:** It would be very interesting to offer point-to-point flights between our and other spaceports. Imagine starting of from our winter city with snow, skiing, dog sledge riding, Icehotel and the northern light and land in Spaceport America in a summer land of sand and sun. It must of course be understood that at this point-to-point flights are not supported by any vehicles, and we need to learn to walk before we run. But it is a great vision of the future!

**SoN:** You are advertising the Spaceport Sweden with the beauty of the undisturbed nature. Although of no technical consequence for the overall global CO<sub>2</sub> problems – are you prepared to counteract criticism of environmentalists?

**JBR:** The environmental impact is a question that we consider as most important. We believe that all efforts possible should be made to find new and more environment friendly ways to access space. The only way to achieve this is to continue to develop new space vehicles and new fuels.

**SoN:** Last question: Are you afraid to be affected of the global financial crisis?

**JBR:** As Spaceport Sweden hasn't made any investments in the business so far we are not that affected by the global crisis. This crisis will affect us indirect and that means that we may start the operations for space tourism later than planned.

We would like to thank you very much for the open and frank answers. The SpaceOps community wishes that Spaceport Sweden will be very successful with this important enterprise.

*Interview: Joachim J. Kehr (Editor SpaceOps News)- January 2009*