

Advice for Starting Wingsuit BASE Jumping



Photo: James Boole

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Vers 2 - 30/01/09

1. Introduction:

We have all seen the amazing videos of people like Robert, Yuri, Loic and the VKB team flying their wingsuits. It is natural to want to follow in their slipstreams but let us make sure we do so safely and with adequate preparation.

This document is intended as an initial information source for BASE jumpers interested in starting wingsuit BASE.

This document is not an instruction manual. It does not contain rules, only advice.

Wingsuit BASE is more dangerous than normal BASE jumping **if the jumper does not make adequate preparation.**

If you choose to pursue wingsuit BASE **you are strongly recommended to seek instruction** from an experienced wingsuit BASE jumper. There is no substitute for one to one coaching.

A wingsuit allows for incredible freefall delays and horizontal distances to be achieved, almost eliminating the chance of striking the object you jumped off, the number one cause of BASE jumping fatalities.

But jumping a wingsuit also has some serious drawbacks:

- The wingsuit restricts your physical movement making exits harder to perform i.e. difficult to climb down to the exit point, easier to go unstable and then harder to recover.

- The wingsuit complicates deployment and prevents you from controlling your canopy immediately after opening.

- The wingsuit jumper must carefully assess the terrain he intends to fly over as the eventual opening point and landing area will be different than for a normal BASE jump and will also depend on flight performance.

- **Experienced BASE jumpers** who use ground rush as an altitude indicator must exercise caution during their initial jumps. **The low fall rate and high horizontal speeds can fool the jumper that they are higher than they actually are.** The wingsuit ground rush for a minimal canopy ride is a lot less intense than for normal freefall.

- The wingsuit jumper must also pay attention to his altitude when flying down a talus or over sloping terrain. The jumper often focuses on the airspace they are flying towards, giving the illusion they have lots of altitude available (e.g. looking at the valley floor in front of them). In this situation the jumper must remember that the critical altitude is the immediate vertical elevation they have over the talus or slope. **Always ensure sufficient altitude for a safe deployment** - bear in mind that as soon as the PC is released the wingsuit will stop flying and drop vertically approx. 200'+ as the canopy deploys.

- Experienced wingsuit BASE jumpers may attempt to make jumps that would be otherwise impossible without a wingsuit. The jumper must be absolutely sure of his own capabilities and those of his equipment when undertaking jumps that allow little margin for error.

2. Considerations before starting wingsuit BASE jumping:

Before starting it is better to not be in a rush and -

An intermediate BASE jumper:

- With minimum 50 BASE jumps (but more jumps are strongly recommended!)
- Cool under pressure, very comfortable in the BASE environment
- Always performing solid exits, also when exiting with arms by your side
- Have good sub & terminal tracking skills
- Have excellent canopy flying skills and landing accuracy
- Have consistent record of stable deployments and on-heading openings

An intermediate wingsuit skydiver:

- With minimum 50 wingsuit skydives (but more jumps are strongly recommended!)
- Who wears a wingsuit as if it were pyjamas, not feeling physically restricted by the fabric
- Always able to find the PC quickly and cleanly, with good on heading openings
- Well practiced at recovering from instability
- Able to unzip arm wings instantly after deployment - like 2nd nature
- Familiar using arm and leg cutaways in freefall and under canopy immediately after opening
- Able to fly the suit comfortably without "potato chipping" achieving reasonable fall rate and forward speed
- Ideally have performed some wingsuit balloon jumps to simulate the exit & sub terminal flight
- See Appendix B for specific flight drills to practice whilst jumping the wingsuit from the plane.

A person who has read all the incident reports, analysed the contributing factors and accepted that wingsuit / BASE jumping is worth the risk of serious injury & death.

3. So you want to wingsuit BASE? Specific preparation:

Equipment:

First thing, it is strongly recommended to start wingsuit BASE using a low performance wingsuit i.e. Prodigy, Phantom or similar. Once you have 10+ good wingsuit BASE jumps you could consider jumping with a higher performance suit.

The following items are **strongly recommended:**

- A **1 or 2 pin BASE container** for wingsuit BASE. The high speed airflow over the container and high deployment angle excludes the use of a Velcro rig.
- A normal terminal pack job i.e. symmetrical, mesh slider packed “up” (large or fine mesh depending on personal preference).
- ZP pilot chutes, the size depends on your canopy, between 34” – 38”. The PC **should NOT have a hackey handle** (or heavy handle). With a hackey PC handle there is the possibility of the bridle wrapping around the base of the handle. A heavy PC handle could contribute to PC hesitation.

The following items are **recommended:**

- A container with “dynamic corners” or open corners.
- A suitable helmet, goggles and low profile protective pads.

Back to the dropzone:

- Perform 20 hop-n-pops using your low performance wingsuit and a sensibly sized 7 cell main, or even better your BASE canopy in a skydiving rig. (The 20 jumps can count towards the 50)
- Work your deployment altitude gradually down to USPA minimum of 2200’, open by 2000’ (Discuss this with your CCI / DZO first, some dropzones may enforce a higher pull altitude)
- If you have any instability, deployment or opening problems go back to full altitude jumps until they are rectified, seek guidance from a wingsuit instructor if necessary.

During these 20 hop-n-pops think about your emergency drills for the following situations, bearing in mind the reduced altitude and time under canopy:

- Unstable exit
- Handle inside of pouch /BOC
- Hard pull
- Floating handle
- PC in tow
- Premature deployment
- Horseshoe malfunction
- Line twists
- Line over
- Water landing
- Jammed zip

Now to a far away land:

It is strongly recommended to go to one of the following well known “high” locations for your first wingsuit BASE jumps. Become familiar with the object performing normal BASE jumps, getting to know landing areas and outs, obstacles, rock drop, winds, talus / ledges etc.

SITE:	PRO:	CON:
Carl's Huge wall in Northern Norway	Good vertical rock drop Huge LZ Good access	Not many sheep and it rains a lot
Norwegian Fjord in Southern Norway:	Good vertical rock drop Medium sized LZ Good access	Very expensive beer
Italian Terminal wall:	OK vertical rock drop Small LZ (assume Heli LZ) Good access	Wind / turbulence can be a problem
Swiss Fungus:	Good vertical rock drop Large landing area	Access is difficult, requiring high fitness level and basic climbing skills

Once you are comfortable with the site, pick a day when you are feeling 100% and the weather conditions are good to make your first wingsuit BASE jump.

Advice for your first wingsuit BASE jump. What to focus on?

- Being current! Make sure you get current at wingsuit skydiving and BASE jumping in the weeks running up to your first jump.
- Pack yourself a nice terminal opening, attach the wingsuit correctly with the PC packed in the BOC with the correct tension (not too loose or too tight). Perform a full gear check before the hike, avoid “exit gear fear” syndrome, as you will already be under pressure.
- Exit in a nice head high position, student style, with your arm wings open and your leg wing closed, your arm wings will help you balance and remain head high. 1-2 sec after exit slowly extend your leg wing and start to trim the suit as you feel the air speed picking up. Premature exposure of the leg wing can cause you to go head low. Better to be head high.
- If you should go head low, stay calm! Bring your head up and if the object allows it, try to stay parallel with the surface and build up some speed to allow you to pull up out of the dive more easily. You may wish to consider this possibility when selecting the site of your first few wingsuit jumps.
- After you have extended the leg wing focus on flying the suit efficiently away from the object pulling nice and high – don't rush, take time to reach, grip and throw the PC. The PC throw should be vigorous to clear the burble the suit makes behind you. Remember to keep your body symmetrical at all times during deployment to help maintain on heading performance.
- It is recommended to learn to deploy from full flight as the BASE environment rarely allows enough altitude to collapse your wings and fall vertically prior to deploying. This also has the advantage of keeping the airflow over your body fast & clean reducing the chance of pilot chute hesitation. Deploying from full flight implies keeping your leg wing inflated and only collapsing your arm wings for the moment required to locate the PC. As your canopy reaches line stretch it is better to close your leg wing as it can catch air causing your body to twist.

Your first 5 - 10 jumps should focus on a stable exit, flight and deployment, once you have these survival skills you can start to think about flight time and distance.

4. You now have some wingsuit BASE experience, what's next?

Once you have become a competent wingsuit BASE jumper you could consider:

- Jumping a higher performance suit
- Jumping from lower objects, for example the higher exit points in the legal Swiss valley.
- Jumping camera
- Performance flying for time or distance
- Performing 2 ways +
- Opening up new objects
- Aerials
- Proximity flying
- Your imagination is the limit! Make sure there is video!

Note: Trying to land any of the current wingsuit designs is only recommended for the terminally ill and Jeb.

You want to jump a higher performance wingsuit?:

So you have done approx. 10+ good wingsuit BASE jumps with a low performance suit and you now intend to jump a higher performance suit.

Assuming you have trouble free experience flying the higher performance suit from the plane you can go ahead and use it for BASE.

Treat your first wingsuit BASE jump using the higher performance wingsuit the same as your first wingsuit BASE jump.

When using large surface area suits (e.g. Stealth or similar) extra caution is required:

- finding the PC can be more difficult
- the larger burble increases the risk of PC in tow
- the arm fatigue on long flights can make pulling the PC out of the pouch more difficult
- not all suits are fitted with an arm cutaway / release system
- larger body inputs are required to control direction and turns are slower making such suits less suitable for proximity

If you find that you are not achieving good object separation in flight it is probably because you are stalling the suit. Try and take speed from the exit and keep it for the whole flight. Keep your chin down and look up to see where you are going.

You want to jump a wingsuit that has a leg pouch PC:

If you intend to use the leg pouch PC - it is strongly recommended to perform the following ground and skydiving preparation.

Prior to jumping the leg pouch PC perform a thousand practice pulls on the ground. Be able to find the handle, regardless of body position with your eyes closed. Perform practice pulls each day for a week or so, simulating full flight then deployment.

When packing the PC into the leg pouch assure that the manufacturer guide lines are followed. The PC should not be too loose or too tight. It is strongly recommended to bar tack the Velcro sleeve to the bridle - check that you leave enough free bridle between the bar tack and pin to ensure the Velcro is completely peeled before any tension is applied to the pin. **Failure to do so can cause PC hesitation.**

Don't mate the male-female Velcro over each other 100% when the suit is brand new, let the them overlap 50% to the side for the first few dozen jumps until the Velcro is slightly worn.

For more details on assembling and packing the leg pouch PC system please refer to Appendix A.

It is wise to perform at least 10 skydives with the system, **using a wingsuit or BASE bridle**, start with normal altitude jumps, performing dummy pulls in flight and then pulling high to give yourself extra time. Assuming you have no opening problems or issues finding the PC handle quickly & easily you can work down to lower altitude deployments.

Treat your first wingsuit BASE jump using the leg pouch the same as your first wingsuit BASE jump.

Section 5 – Proximity Flying

Proximity is relatively new sub-discipline that is gaining popularity, offering new challenges and incredible visuals. No definition exists but for the sake of this document let us define proximity flying as when a jumper is unable to open their parachute during flight, as there are obstacles very close to you (either below or to the side) that you must fly away from to deploy safely.

Pursuing performance will generally reduce the risk of incident on a given jump taking you further away from the object, assuming a conservative deployment altitude. Flying close to a large solid object obviously has a negative effect on your chances of survival.

The people that regularly perform proximity flights have hundreds of wingsuit BASE jumps, on top of substantial BASE and wingsuit skydiving experience.

At the moment we see two types of proximity flying being performed:

- Flybys, passing close to a single fixed object
- Terrain flying, following the line of a cliff, talus or ridge for a prolonged period

Flybys are less dangerous, usually involving a straight flight path and the amount of time when you cannot deploy is a few of seconds.

Terrain flying, by definition, is more dangerous requiring turns and navigation. Depending on the line the jumper chooses to follow the "no pull" period can last for several seconds or more..

Three fundamentals before starting proximity are, know the suit, know the object and know yourself.

Your wingsuit should be like a 2nd skin, knowing how to fly it without thinking; knowing how to fly at all angles, how quickly it recovers from a dive and how it turns (and slips during a turn).

You should have jumped the object previously and know the terrain well, the rock drop, the form & steepness of the line you intend to fly and what is around every corner.

You should know yourself and be able to be objective about the actual conditions and your physical & mental state in regards to the planned jump. Saying no to a jump is sometimes harder than just going for it.

Planning your line

The path you choose to fly depends on your skill level and experience at proximity flying and also with the object in question. In general it is better to never break the following 3 rules:

- 1. Only fly terrain steeper than your maximum glide.**
- 2. Only fly on the outside of the curve, this way if you are slow to turn you only fly away from the object.**
- 3. Always have an escape route.**

Experienced flyers may momentarily break one of these rules, but breaking 2 or all 3 at the same time is a bad idea. In flight it is better to have a high horizontal speed (that can be used to plane out to gain altitude) and fly a smooth and predictable line.

Proximity flying is even more sensitive to adverse weather conditions than normal BASE jumping. Conditions with wind, turbulence or poor visibility are better avoided.

Proximity flying is still in its very early stages, if you wish to try it go to a suitable high object (3000' +) and start slowly. Proximity flying has already claimed lives.

6. Conclusion

Following these guidelines does not make wingsuit BASE jumping a safe activity.

Wingsuit BASE and proximity flying are still relatively new disciplines. It requires jumpers to develop new skills, new muscle memory, new judgement and new understanding. Take your time and respect it. The mountains aren't going anywhere and will be here long after we are gone.

This document is by no means the final word on wingsuit BASE jumping, always seek advice and guidance from other experienced wingsuit jumpers and share what you discover.

By taking part in this activity you are in effect a "test jumper", we all still have a lot to learn....

Let's be careful out there

Long Flights

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Disclaimer:

The authors of this document accept no responsibility, financially or otherwise for any loss, serious injury or death that occurs as a result of any persons following the advice contained within this document.

BASE jumping and wingsuit BASE jumping are extremely dangerous activities carrying risk of serious injury or death. Performing the activities described in this document with out becoming an expert skydiver and completing dedicated BASE / wingsuit training will likely result in a demonstration of natural selection.

Appendix A:

A1.Using the leg pouch deployment system

Original format taken from:<http://www.interone.net/learn/basepc.html>

The following is a description for the recommended method to use the leg pouch deployment system found on Phoenix Fly wingsuits. This includes the installation of the shrivel flap and techniques for pilot chute folding.

The leg pouch pilot chute pouch was created to give wingsuit BASE jumpers an easier pull. When jumping the larger wingsuits (Vampire etc) there is the chance for the arm wing to cover the BOC on a rig. With the leg PC pouch the handle is conveniently located at your finger tips when you close your wings. It can make finding the handle easier and safer.

Whilst it is recommended to practice using the leg pouch in the skydiving environment it is **STRONGLY RECOMMENDED TO NOT USE IT** for flocking, back flying or acrobatic flight.

The leg pouch is best reserved for solo skydives in preparation for BASE jumping and not for everyday skydiving use.

For normal BASE jumping we STRONGLY RECOMMEND using a separate bridle with out the shrivel flap (i.e. get an extra bridle for when you are not using the leg pouch).



A2. Assembling the leg pouch deployment system

The shrivel flap on the leg pouch system keeps the bridle in place until deployment and then "shrivels" up to allow the bridle to pull the pin on the container. The shrivel flap is held in place by Velcro.

The bridle shrivel flap works the same way as the closing flap on a Velcro BASE container.

“Why does it need to shrivel?”

We are all familiar with Velcro but it might be a good opportunity to look at it again to make a simple test.

Mate the shrivel flap on the suit Velcro and pull upwards on one end of the shrivel flap, the Velcro should peel quite easily. Now try the same test but pull the shrivel flap towards the bootie of the suit, it should be much harder this time, probably requiring you to hold the suit in place. Why? Because Velcro is strongest when we try to shear it (i.e. drag the 2 layers over each other).

When the PC inflates in turn pulling the bridle it applies shear to shrivel flap attached to the bridle – so we need the shrivel flap to “shrivel” to reduce the pull force required to release the Velcro. If we fail to attach the shrivel flap to the bridle in the correct way it could cause a pilot chute hesitation. The photo below shows the shriveled flap half way through a simulated deployment:



It is for this reason that the shrivel flap is attached to the bridle at the end **closest** to the rig – so that it can shrivel up. Refer to the photo below:



PC end

Rig end of bridle

Installation:

To start:

- attach the suit to the rig in the normal way and then look to see if the Velcro strip on the pouch sits under the rig lateral
- If yes it is better to use the piece of blank Velcro supplied to cover this section of the strip to protect your rig from becoming damaged by abrasion with the Velcro. See the photo below for a photo of the blank Velcro in position.



Photos showing the blank Velcro strip in position, with the rig pulled to the right for clarity.

The shrivel flap should be **permanently** installed on the bridle. If you do not attach the shrivel flap to the bridle it can move freely and could cause a pilot chute in tow malfunction.

To install:

- Thread the bridle through the **inside** of the shrivel flap, removing any twists, mate the shrivel flap to the Velcro on the suit, leaving a small gap at the open end of the pouch.
- Stow the bridle on the rig in the regular way. Remove the slack bridle that remains between the bottom of the rig and the shrivel flap by pulling on the PC end of the bridle.
- Use a tailors pin or a needle to temporarily attach the pin end of shrivel flap to the bridle.
- Now simulate deployment by pulling on the PC end of the bridle, ensure that the shrivel flap completely separates from the suit Velcro before any tension is applied to the bottom pin, as shown in the photo below:



- If tension is applied to the pin before the Velcro has completely peeled then a pilot chute in tow could occur. If this is the case, leave more bridle between the pin and shrivel flap and repeat the test.
- Leave a few centimeters of extra bridle between the shrivel flap and rig, as this will allow you to bend over with the suit on without peeling the Velcro.

The exact distance between the bottom pin and the end of the shrivel flap depends on many variables, such as your height, rig type and wingsuit model. The gap left on the suit used in this example is 42cm (16.5") - pin attachment to stitching, as seen in photo below. The distance that should be left for your setup will most probably be different.



Once you have found the correct distance you can attach the **pin end** of the shrivel flap to the bridle using a bar tack or by hand using a suitable strong thread.

If attaching the shrivel flap to a skydiving bridle with a kill line it is possible to stitch either side of the kill line so that the collapsible PC continues to work in the normal way.

The excess bridle between the top of shrivel flap and corner of the container can easily be stowed inside the BOC pouch.

Packing Instructions:

Step 1: Remove any twists from the bridle and attach the shrivel flap to the suit Velcro, leaving a small gap at the open end of the pouch.



Step 2: Stow the bridle under the side flaps of the container in the normal way. Any excess bridle between the shrivel flap and container can be stowed in the BOC pouch.



Step 3: Ensure there are no twists in the bridle and then proceed to make a mushroom PC pack job, lie the mushroom down as shown.



Step 4: S-fold the mesh inside the PC and then continue to S-fold the bridle, leave about 12cm -14cm (5" - 6") of bridle exposed to insert inside the pouch with the PC.



Step 5: Wrap the mesh around the bridle.



Step 6: Cover the mesh & bridle with the other side of the PC and roll in each side to make a long thin pack job.



Step 7: Insert the folded PC into the pouch and check that it slides out with a reasonable amount of pull force. Varying the length / thickness of the PC pack job can regulate the pull force required. Too tight and or too loose can both be problematic.



Other Considerations: Prior to exit always check the position of the PC handle, bridle and shrivel flap.

Always throw your pilot chute vigorously to ensure it clears the burble behind your body.

NOTE: As stated previously it is strongly recommended to use a different bridle without the shrivel flap for normal BASE jumps. Never stow the shrivel flap under the closing flaps of the container.

End

Appendix B

Specific wingsuit drills to perform whilst jumping from the plane:

- Barrel rolls
- Front flips
- Back flying
- Flying and pulling with left arm wing closed (i.e. to simulate blown wing)
- Pulling out of steep dives quickly (i.e. bad exit)
- Dropping knees
- Turning with minimal altitude loss
- Carving turns
- Arching, de-arching
- Deploying from full flight
- Flying with one bootie off
- Turning only with legs
- Turning only with arms

Appendix C – Wingsuit fatalities

#68 Kirill Kiselev, September, 2002

Age: 27, from Ekaterininburg, Russia.

Cliff Jump (Wing Suit)

Vikesaxa (Eiksdalen Valley) Norway

Impact

I received this report from a close friend of Kirill who witnessed or heard most of the jump. Kirill has 500 skydives with 20 being with a wing suit, and 30 BASE jumps, with 2 being with a wing suit. This fatality began with an inadvertent low pull from a man who didn't do low pulls. His friend believes Kirill encountered a stability problem late in the flight. The friend, along with authorities, inspected Kirill's body and gear at the hospital. Kirill had opened his canopy, the slider is at the links. Both toggles are still stowed. The wing zippers are closed and the swoop cords are still over his fingers. The wing fabric between his legs is torn. His broken neck and one broken leg suggest opening and impact occurred at about the same time. The report intimates failure of the wingsuit material between Kirill's legs caused a stability problem at pull time. By the time Kirill stopped trying to overcome the situation and deploy, it is too late. Kirill is the first BASE jumper to die flying a wingsuit on a BASE jump.

#69 Rob Tompkins, September 12, 2002

Lysbotn, Norway

Cliff Jump (Wing Suit)

Kjerag

Impact

This is the second wing suit BASE fatality. Rob has 247 BASE jumps with 92 being with a wing suit on the day he died. A report states: "For the last month, Rob had his eye on a particular jump between launch points 4 and 5. We looked at it, doing rock jumps and basically studying the jump. There are two launch points next to this particular jump, one with a 7-second drop and the other with an 8-second drop. Rob jumped the 7-second launch point 10 times always doing a reverse gainer. The place he's looking at now, he dubbed the, "RT Hjørner," and has a rock drop time of 5-seconds. We analyzed this site on video and with other wing suit pilots. In my opinion, the jump is not achievable - and I repeated this to Rob. Other wing suit pilots said the same thing. Rob is convinced he can do it including a reverse gainer. After 7 seconds of freefall Rob impacted the talus ledge. He never tried to deploy his pilot chute, knowing that this would not save him. Rob believed he could out fly the ledge right up until he died. Rob is remembered as a good man, full of respect, and kind to everyone."

#70 Lukas Knutsson, October 11, 2002

Cliff Jump (Wing Suit)

Engelberg, Switzerland (Cold Steel)

Impact

Lukas has a good launch and good flight with his wingsuit and pulled high over the landing area. This is the third BASE wing suit fatality. Despite a powerful pull the pilot chute ended up in the turbulence behind him. In the burble the pilot chute spun around very fast. Lukas notices the deployment is hesitating and collapsed his wings and rolled to one side to clear the pilot chute. At this point the pilot chute achieved bridle stretch but the bridle had entangled with the pilot chute so badly the pilot chute is almost totally collapsed. Lukas did rollover to the other side and struggled hard to get the canopy out of the container. However, the container remained closed to impact. Lukas is a very experienced long time BASE jumper (this site is now called "Cold Steel" in his honour) and he will be missed by the entire BASE community.

#76 Gabi Dematte, August 13, 2003

Cliff Jump (Wing Suit)

Gasterntal, Switzerland

Cliff Strike & Impact

The following report is from one of Gabi's many friends. "Gabi went to jump alone, like she did very often. Getting away from the crowds in Lauterbrunnen she went to another valley known by only a very few jumpers. She couldn't out fly a ledge with her wings. Which is awkward, because she kicked ass with those wings. She did not attempt to pull. Gabi was a very good jumper, and a super nice person. I was lucky to get to know her and I will treasure her contribution to my existence. For me, it was nice to jump with another woman. It was special and it did not last long enough. Lauterbrunnen valley is empty and quiet now." Gabi is the fourth BASE wing suit fatality."

#81 Jeff Barker, July 5, 2004

Age: 32

Cliff Jump

Mount Baker-Snoqualmie National Forest

Impact

Jeff is jumping with a wingsuit and he failed to clear a outcropping in freefall.

#82 Duane Thomas, August 21, 2004

Age: 35

Cliff Jump

Lauterbrunnen, Switzerland

Duane, a Kiwi with a quick smile, is a well known and experienced BASE jumper. The following is from an eye witness. "The jump is witnessed by two British jumpers and two Swiss jumpers. One Brit watching, and videoing, from the exit point, the other three watching from the LZ. This is Duane's first wingsuit BASE jump, and his first jump ever with a leg mounted pilot chute pouch. Prior to this jump Duane prepared by making 50 aircraft and 2 hot air balloon wingsuit skydives. Duane had a good exit and a good flight. Everybody saw him reach for and locate the pilot chute at what the witnesses said is a reasonable altitude. He then kept his hand there and continued in freefall. The speculation is the lack of normal ground rush (like the type he is used to when not wearing a wingsuit) might have fooled him. The Swiss are yelling at him to pull and he finally did so, at what they said is about 30-feet above the ground. The canopy lifted out of the pack tray but is no where near line stretch when he impacted in a full flight position. According to the Swiss there is no fumbling around, or looking for the pilot chute handle - all the witnesses agree on this. He reached and located the pilot chute, but just took too long to deploy it. A hard pull cannot be fully discounted at this time, but all the witnesses believe he just waited too long." This is the sixth BASE wingsuit fatality since the first one occurred in September of 2002.

#83 Roland (Slim) Simpson, October 22, 2004

Age: 35

Building Jump (Wingsuit)

Jinmao Tower, Shanghai, China

Building Strike

Slim is an experienced and well known BASE jumper with over 1200 jumps when he launched for this wingsuit flight at a major BASE event in China. After a good flight he deployed into line twists and is unable to avoid a hard rooftop strike on an adjacent structure. Slim is a major influence on an entire generation of BASE jumpers and this is a major blow, not only in his home country of Australia, but to the entire BASE world. There is much to be said of this man including this sentiment from one of his good friends. I am awed by his courage, determination, and perseverance in coming back to a sport that had battered and broke him once before. He faced down the demon of fear after his recovery and re-entered the sport with humor and panache. "And cripples can fly," he said at exit. What an inspiration he was . . .

#89 Siller Wolfgang - May 21, 2005 Siller Wolfgang

Object: Earth

Location: AUSTRIA, , Drachenwand

Impact

Description:

This jumper had about 100 BASE jumps and is flying a BM S3 wingsuit for the first time. It's reported he had 10 previous wingsuit BASE jumps all with a BM GTI. It is being said that winds may have been a factor in his having stability problems. A rescue team found him with his pilot chute still stowed in his leg strap pouch. Locals are asking BASE jumpers to refrain from jumping this site for at least a month

#112 Jimmy Hall - May 09, 2007 Jimmy Hall

Object: Earth

Location: CANADA, Nunavut, Baffin Islands, Sam Ford Fjord

Impact

Description:

Adventurer Jimmy Hall was killed in a tragic accident north of the Arctic Circle. Jimmy was in a very remote area near Sam Fjord on Baffin Island in Canada filming a documentary on the region that included base jumping from the incredibly harsh mountains. Jimmy died during one of those base jumps while performing a wingsuit jump. Details are yet to be released. A tribute to Jimmy can be found here <http://www.mediastars.tv/jimmyhall/>.

#115 "Stevo" Stephen Richard Anderton - Aug 14, 2007

Object: Earth

Location: NORWAY, , Langrappiken

Description:

This report came from Simon Plume, a friend of Stevo's who was also on the load:

It was our 2nd jump for the day in the Litldahlen area. The first was from the 3rd valley, this jump was from the 2nd valley. The visibility was excellent, there was a small breeze at the exit point but nil wind down below. The jump is about 4550 feet from exit to landing. It was a 5 way, wingsuit jump. But due to the nature of the exit point, only about 2 jumpers can exit simultaneously.

Stevo exited first, followed by another jumper and then myself with 2 others following. He was in a V1. We flew the left wall out into the valley and then turned a sharp left to follow the wall along to where the 3rd valley comes out (We have flown out of this 3rd valley on 2 other occasions - one being earlier that day). At this point, I was about 80m behind and slightly above. Stevo had planned to fly up into the 3rd valley briefly before coming back out. We were flying close to 90% max flight.

Stevo turned left into the 3rd valley briefly, before straightening again and then he started to turn right back out of the 3rd valley. I did not go into the 3rd valley but continued to fly straight. Due to his turn I was now only 40-50m behind and still above. As he continued his right turn it became a hard bank (most likely because he realised he was too far in) to the point that his right arm wing folded under, similar to when you initiate a barrel roll. With the speed he carried into the turn he most likely would have been getting alot of side-slip as well. Stevo corrected but lost stability whilst trying to maintain his sharp turn. He remained unstable and impacted the far side of the gorge after another 2 sec. At this point I was about 30-40m above and 10m behind.

I flew away from the valley, opened, landed and we called a helicopter. Stevo's body was retrieved within 2.5hrs.

Stevo was a great friend to those around him and will be sorely missed by the Oz BASE crew and those around the world that met him. He was inspirational, a joker and a great mate.

#122 Angus "Gus" Hutchison-Brown - May 25, 2008

Object: Earth

Location: SWITZERLAND, ,

Description:

This report came from the a witness and fellow jumper:

I was the only jumper who witnessed Gus' last jump from exit to impact so i thought I'd tell all to clear up and questions you have about the incident.

We all met in the morning at 6am like we all had been that week, Gus had only arrived a couple of days earlier, we were all off to an exit point approx an hour out of the Valley that most of us hadn't jumped before, during the drive Gus revealed to me that this would be his third attempt at the this jump, winds thwarting his previous attempts.

At the exit point we all looked over, deciding on our landing areas etc, winds were gonna be no problem thankfully this morning so we all went ahead and kitted up. I do recall thinking at the time that the powerlines were at a slightly awkward distance for a wingsuit, but had no desire to point out this fact as Gus being an experienced wingsuit pilot and what with me having none and i just had confidence that Gus would make it over them no problem as this was his plan, so who was it for me to offer advice or even make my opinion heard.

We decided on an exit plan, all solos and i went last as i wanted to film everyone's exit, the first 4 jumps went fine, all 4-5 secs delays and made it back to the planned landing areas, then Gus launched himself off, from my perspective it looked like a great flight, although i was watching it on my LCD screen, not with my eye, i can't say how long he was in flight for, but as he starting getting nearer to the powerlines i did think to myself damn he's low, then i saw him deploy just he had made it over the lines, from my viewpoint his canopy came out behind the powerlines, but no sooner had his canopy deployed it collapsed on the ground, my cam was fully zoomed in at this point as it was hard to tell if there was movement from his white wingsuit, i turned the cam off and was squinting to see if there was any movement, there wasn't, and i knew he was at least hurt bad.

As you can imagine, i didn't wanna jump, but not having the car keys i was stuck at the top, the others all landed far away from Gus, and i decided that i could be first on scene if i just jumped now, i don't even remember the jump, it was just a means to get down quick, i landed next to Gus, but Rich had made it before me as its a long canopy flight.

Looking back on the jump, it would seem to me that Gus obviously realised in the last few seconds of his flight that he wasn't gonna make it over the powerlines, but rather than pulling and deploying into the lines, he tried to make it over them eye witness on the ground said his flight was very "flat" compared to usual body position, which sez to me he was trying his best to clear the lines, PC was thrown out the same height as the lines, approx 120-150ft, but as we all know, that simply isn't enough...

The paramedics were on scene within 15 mins, but there was nothing they could do.

I hope you all take comfort in the fact that it was instant, Gus did not suffer and he did die doing something he loved, in a place he loved.

#123 Yoann Lizeroux - Jul 01, 2008

Object: Earth

Location: SWITZERLAND, , Interlaken

Impact

Description:

After leaving exit point Jungfrau, a turn in flight apparently made for the purpose of descending and passing close to the first major ledge resulted in Yoan impacting said ledge.

#124 Ben Cannon - Aug 22, 2008

Object: Earth

Location: SWITZERLAND, , Lauterbrunnen

Impact

Description:

No one saw the final seconds of the jump, but judging from Ben's video he went in the trees at linestretch, no real inflation occurs. A jumper from the last load (3-way, all wingsuit, Ben shot video) speculates that 3 things contributed to the tragedy:

1. Loss of attention to altitude because he was watching the others.
2. Possible missed pull
3. Low pull

Ben was conscious when the others reached him. They thought it was bad but really thought he would pull through. He was airlifted to Interlaken after he was stabilised, and then airlifted to Bern because of the severity of his injuries. He did not make it to Bern.

#125 Simon Skovgaard Jensen - Sep 11, 2008

Object: Earth

Location: SWITZERLAND, , Ultimate, Lauterbrunnen

Impact

Description:

This report comes from a well respected jumper at the site:

The jump site where he went in on is called the ultimate.

It is a great jump and not actually very dangerous itself, but getting to the exit point and the exit itself is a big mind fuck. Even after my first jump there I landed and I was shaking and I have 1700+ jumps. From what I was told afterwards it was Simon's first repel which would've added to the nerves. The exit is also technical as you can't see over the edge past a few meters and it is quite underhung for the first 50 feet. Nothing too dangerous but again, a big mind fuck as you need to push off quite hard to get clear. For me personally it is a tracking jump and not a wingsuit jump but it is not for me to tell others they can or can't jump. Again simon seemed like a safe and sensible jumper so I did not worry about him at all.

We were not looking up when Simon jumped but immediatley after impact his friend came running over explaining what he had just seen

He said he saw someone tumbleing and then a partial parachute coming out and more tumbling down the wall until the talus. He also said there was no way that who ever it was could have survived, so it must have been fast.

From the exit point my friend told me that when Simon was about to exit he was very nervous and couldn't get his footing in the right position to exit. (its a bit of a shitty exit point for your feet and there is some grass on a slope). When he exited he went off in a head down position with, I think, his right shoulder down, with his opposite leg kicking to get stable, before he disappeared out of view.

When I got to him on the talus he was wrapped in his tangled canopy and dead, with massive multiple injuries.

In my view I feel that he exited a little unstable and possibly panicked because of the mind fuck related to the jump. Because of the wingsuit trapping his arms in and also his experience level, I feel he tried to fight the tumbling all the way down either

1) until impact where the parachute bounced out and he continued to tumble and get wrapped in his canopy until he stopped.

or

2) he tumbled from exit and opened his parachute too late and tumbled down to where he came to rest.

I have a feeling from memory that his pilot chute was still in its pouch which would mean it was scenario number 1.

There is not much to do to prevent this type of death except for each and every person to know their own experience levels and not push forward too soon. This is an age old problem that will never go away. Either you make it through that stage of jumping, either uninjured, injured like a lot of people do, or dead which is still pretty rare over all with all the jumps that get made.

I do think that his death has made people realize that this jump is an experienced person's jump only and hopefully that will keep people away. A similar lesson is learnt from every fatality.

#126 Igor "Anis" Anisenko - Oct 16, 2008

Object: Earth

Location: RUSSIAN FEDERATION, , Crimea

Impact

Description:

Anis was jumping Forostky Kant, wingsuit exit point 'W1'. This is an 18m (60 foot) extended deck off the cliff edge. Rock drop impact is 100m (330ft) below the exit point. Strong wind was reported. Anis left unstable and ended up impacting the cliff.

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Patrick de Gayardon made the first wingsuit BASE jumps in 1997, in the past 12 years there have been 85 incidents, 15 of which were wingsuit jumps.

Other wingsuit incidents:

Patrick de Gayardon

Geoff Peggs

Dwain Weston

Benny

Appendix D – Wingsuit site selection

You want to open up a new object jumping a wingsuit:

So you have become a competent wingsuit BASE jumper and you intend to open up an object that has never been jumped with wingsuit. Here are some factors to bear in mind.

- Make sure the vertical rock drop gives you enough altitude to launch the suit and get flying with a little extra in case you have a poor exit.
- The altitude profile of the object will also affect your decision. Use tools like rock drop, laser range finder and GPS to accurately measure the object.
- When estimating the horizontal distance that can be achieved from an object remember to factor in the altitude loss from exit and deployment.
- You may also wish to consider the conditions at the exit point and whether it is practical to put on the wingsuit there.
- Booties offer little traction when wet or muddy, be careful that you have good ground to stand on for your exit
- A wingsuit takes several seconds to start generating significant lift and forward speed. Therefore jumping a wingsuit from below 1000' offers very little benefit in terms of freefall time and object separation (but it adds some colour to the jump).

In recent years the accepted rock drop has decreased somewhat. For beginners 10 seconds or more is still wise to allow time to recover from an unstable exit. Current experienced jumpers may accept less depending on how the terrain develops after exit.

Appendix E – Changes from version 1

- “You want to jump a higher performance wingsuit” section updated
- Addition of Proximity flying section
- Leg pouch pilot chute section updated
- Fatality list updated

End