Report for IGC Bureau on the 8th FAI World Sailplane Grand Prix Championship, Vitacura (Chile) 13 to 20 January 2018

Director of the competition: Brian Spreckley

Overview
8 years after the successful 3rd World Sailplane Grand Prix Final held in Chile, the best pilots in the world met again in Vitacura for the Final of the 8th series. Once again, the highly motivated team of the Club de Planadores de Vitacura did a fantastic job in preparing and running this event. Six thrilling SGP races were able to be run. Some of the tasks went to the highest part of the Andes and good conditions allowed pilots to achieve average speeds close to 150 kph. As it is now usual, the coverage of the event on the internet was done by the IGC integrated team with display of tracking, videos, interviews, etc. A big technical breakthrough was made during this final by the extended use of the "IGC trackers", which now provide an elegant, reliable and affordable solution for the tracking of gliding competitions. Very positive feedback was received from all around the world. Unfortunately, the competition was overshadowed on the last day by the tragic accident to the local pilot Tomas Reich.

1. Logistics
Since there were no 18m gliders available in Chile, nearly all the gliders had to be shipped from Europe and the costs for this transport have most generously been taken over by the Organisers. The shipping was very well organised, the gliders being first packed in two frames and in one container at the Cobra factory before being shipped in late October. All gliders arrived undamaged and in time, so that several pilots could make practice flights in Chile and participate in the Andes Open Class before the Grand Prix. Many thanks are due to Gerd Eylers who organised the shipping professionally.

2. Infrastructure and Facilities
The competition took place at Vitacura, a spectacular setting close to the city of Santiago, Chile, in the foothills of the Andes mountains. The airfield is relatively small, and the 800 metre long runway is bordered by a riverbed and a motorway.

The briefings were held in a room located in the restaurant which was the place where everybody met during the competition. The competition director, the task setter and the scorer were hosted in the main office of the club.

The media team installed their "studio" in a remote building from where they could broadcast the races without being disturbed.

A high-speed internet connection was available in the main office and in the "studio" but the Wifi coverage did not work very well in the restaurant because too many people tried to connect at the same time.

3. Organisation
The Club de Planadores de Vitacura has solid experience in organising Grand Prix since they have already organised no less than 6 SGP, including a final. As a result, the contest organisation was efficient and well staffed and all the members of the local team were well prepared for their role, extremely helpful and friendly. There was also excellent cooperation between the SGP team and the local organisers.

4. Day to day operations

The competition was run smoothly. The briefings were short and to the point. The met information provided by the Chilean Meteorological Service was adequate. The task setting was excellent, making full use of the topology of the Cordilleras. The distances ranged from 266 km to 359 km. On some days, the tasks went to the highest part of the Andes but the task setter made sure that the pilots had always the choice between selecting the direct route across the highest mountains or flying along the lower ridges but covering a bigger distance.

The aerotows were performed with five 180 HP Piper Cubs which generally launched the 20 gliders on the top of the Manquehue (1500 metres) in less than 40 min. Except on the last day, the start was given remotely at 2400 m so that the pilots could easily reach the higher ridges located North of Vitacura. In order to improve safety, a common turn direction was imposed up to a given distance from the start (left circling if the first leg went to the North and right circling when it went to the South). Due to the small size of the airfield and its urban environment, the finish line was set at 850 m, i.e. almost 150 m above the airfield elevation. After having crossed the finish line, the sailplanes could fly a normal landing pattern and land safely below other finishers. There were also no critical situations during the finishes despite sometimes having “mass arrivals”.

5. Scoring

The scoring was performed with Country Aero, the software developed by Alexander Georgas, which is very fast because it automatically detects all violations of the rules (Only the detection of circling in the wrong direction up to a distance from 20km to the start line does not seem to be have been implemented…) The final ranking of the pilots who gained points was generally confirmed less than 30 minutes after their landing. A short prize-giving ceremony was organised every day at around 18h15.

6. Tracking

Tracking was performed with the new trackers developed by Angel Casado and his team. These “IGC trackers” are based on the Flarm technology but have a more powerful emitter which gives them a better range than conventional Flarm units. Additionally, their range was also extended by mandatory use of external antennas, provided by the organisers, which had to be mounted below the fuselage to allow a better reception of the signal on the ground. Another interesting feature of these new tracking units is that they are able to relay the signal of other tracking units (including from conventional Flarms). Comparisons made every day show that the new units provide much more tracking data than conventional Flarm. The local organisers also mounted some ground relay stations in “strategic“ locations. The coverage over the competition area was very satisfactory and, in most cases, the tracking signal was only ever lost for a very short time. Finally, the new trackers also integrate a pressure sensor and are able to provide an igc file which will make real-time scoring reality in the near future. Last but not least, these IGC trackers can be produced at a reasonable price (about 150 Euros,). In the future, we may require all participants in Grand Prix competitions to carry their own tracker in their glider, and the local organisers will only have to ensure that the coverage is good enough in the competition area (and set up ground relay stations if it is necessary to improve it). Overall, Angel has done an impressive job by solving the tracking problem in such an elegant and affordable way.

The display of the 3D pictures of the tracking was performed with Silent Wings Studio which works well. Angel Casado also developed a very interesting 2D live tracking program which can aggregate data from different sources, such as FLARM (OGN), OGN trackers, SPOT, LT24 (Smartphone app) and SKYLINES (The XCsoar application on Android) which improved the coverage when the Flarm signal was not available. The system also proved to be very useful in emergencies because it made it possible to inform the organisers that something has happened very shortly after the accidents occurred.

7. Internet and Media
The IGC media team, composed of Shawn Lapworth (commentator, interviewer), Brian Spreckley (commentator) Angel Casado (in charge of the tracking) Benjamin Néglais (in charge of the display with Silent Wings Studio and news on internet) Claire Néglais (pictures, Fast and Curious interviews) and Ann Lapworth (interviews) did a professional job. The event was very well covered on the internet with stunning pictures from the tracking made with the latest version of the Silent Wings viewer, excellent interviews of the pilots on the grid and after the flights. Video summaries and daily reports were also posted every day on the sgp.aero web site. We do not yet have the statistics from the web site and social media but it seems that many people watched the races especially in Europe where, due to time difference, the races started around 19:00 CET. Many positive comments about the quality of the coverage were received.

8. Public
The local club had made a major effort in promoting the event and, on the final day, the airfield was open to the public. Many spectators watched the launches and the finishes as well as displays by helicopters and aeroplanes from the Fuerza Aérea de Chile.

9. Complaints and Protests
There was one complaint and no protests. The complaint came from Sebastian Kawa after race 5. Sebastian Kawa crossed the finish line just ahead of Sebastian Nägel, but both were penalised because they flew below the minimum altitude. Sebastian Kawa lost the first place because he got a higher penalty than Sebastian Nägel, since he was 8m below the limit while the German pilot was only 6m lower. He complained first verbally and then in written form by arguing that he was higher on the finish line than Sebastian Nägel and that the finish altitude measurements were not correct because the altitude of his glider before the start (taken as baseline for these measurements) was not the same as the altitude of Sebastian Nägel's glider because they had a different position. After a discussion with the CD (and after having received detailed explanations from Alex Georgas on how the software measures the altitude) he renounced to convert his complaint to a protest.

It should be mentioned that, once again, Sebastian Kawa had a confrontational attitude regarding a number of incidents during the event.

Additionally, in an interview given after the competition to a Slovenian media outlet, the winner of the competition criticised heavily most of the SGP rules as well as the way the Competition Director directed the Chilean Final.

It is regrettable that such a great pilot behaves so unsportingly and is so disrespectful towards volunteers serving as officials at our competitions.

10. Safety
Unfortunately, we had two accidents during this competition, the second of which, tragically, was fatal:

On January 11th, the German pilot Klaus Kalmbach crashed his JS 1 during the first practice day before the SGP. He was on final glide at about 20km from the airfield in an area north of Los Blancos. Klaus unfortunately hit a tree when low on the slope. He was rescued by the Search and Rescue Helicopter and taken to the hospital in Santiago. Klaus has some strain injuries to his back but does not need surgery. He was flown back to Germany accompanied by two doctors sent by his insurer. According to the latest news, he is slowly recovering.

The fatality happened during the last race day on January 20th.The tracker signal from the Ventus 2cM flown by the local pilot Tomas Reich, was lost whilst he was flying along the ridges south east of Santiago, fairly close to the position where Klaus crashed. An aircraft was dispatched from the airfield and the Chilean Search and Rescue were alerted. They found the glider on a slope at 1600m and Tomas was found to be alive but injured. Once he was stabilised by the paramedic crew, he was taken aboard the helicopter to Santiago hospital.

Sadly, Tomas died from his injuries during the evening. The news of Tomas's death was relayed to the competitors and organisers at Vitacura a short time after the closing ceremony of the contest.

This fatality stirred up strong emotion worldwide within the gliding movement and left all the participants and the organisers deeply saddened after the Prize-giving Ceremony.

Having two accidents, one of them fatal, in a competition with only twenty participants is clearly unacceptable and we have to analyse these accidents objectively to find out their causes and to propose, if possible, measures which may prevent similar events from occurring again.

These accidents raise some fundamental questions:

- Do we have too many accidents at Grand Prix competitions?
- Are these accidents due to the concept of the Grand Prix?
- Did the pilots in question have enough experience to participate in this Grand Prix?
- Did the pressure of the competition push the pilots to take too many risks?
- Were the tasks too challenging for the pilots?
- Did pilot fatigue play a role in these accidents?
- Are pilots perhaps flying with too high a wing loading in the Grand Prix?

Let us try to answer these questions.

10.1 Do we have too many accidents at GP Competitions?
Since the first Grand Prix held in 2005 in Saint Auban, we have had the following accidents with fatalities or injuries:

- 2007 Fatal accident to the German pilot, Herbert Weiss, at the Final in Omarama(NZ)
- 2009 Fatal accident to the Chilean pilot, Mauricio Perez, at the Chilean Qualifying GP
- 2009 Accident with severe injuries to the Austrian pilot Wolfgang Hartl at the Austrian Qualifying GP
- 2018 Accident with non-life-changing injuries to the German pilot Klaus Kalmbach at the Final in Chile
- 2018 Fatal accident to the Chilean pilot Tomas Reich at the Final in Chile

While these accidents are by no means anecdotic, they must be put in perspective because, between 2009 and 2018, we had no significant accident at any of the 49 GP competitions held around the world in many different types of terrain.

10.2 Are these accidents due to the concept of the GP?

Grand Prix competitions differ from conventional competitions by the fact that the pilots start simultaneously, often fly together on the tasks, and finish close to each other. At first glance, such a concept increases the risk of collisions. However, provision has been made in the rules (limitation of the number of participants to 20, mandatory circling directions before the start and up to 20 Km on the first leg, minimum altitude on the finish line etc) to mitigate these risks as far as possible. In practice, these rules seem to have worked quite well since, thankfully, collision has so far been avoided. Thus we may consider that, **so far none of the accidents we have had have been directly related to the concept of the Grand Prix**. Of course, this conclusion is only provisional because in safety matters, nothing is ever guaranteed.

In fact, the analysis of the accidents listed above shows that they all occurred during mountain flying, the pilots hitting the terrain while flying along slopes.

10.3 Did the pilots have enough experience to participate in this Grand Prix Final?
Some people questioned the experience of the pilots and the way they qualified for the Final.

According to the information we have, Klaus had 2000 hours flying in the Alps. He qualified quite normally for this final by placing 3rd at the Slovenian GP in Celje and had also participated in two other Grand Prix organised in mountainous areas (Worcester SGP 2015 and Niederöblarn SGP 2016). We nevertheless learned after his accident that, despite his flying experience in the Alps, he had not been at ease flying in the Andes during the Andes Open.

Tomas had 1500 hours flying in the Andes. He benefitted from a green card awarded by the organisers (as permitted by the SGP rules) but had never participated in **any** previous Grand Prix.

It has been suggested that we put in place a more restrictive selection of the pilots, such as in Formula One motor racing, where they have special tests for qualifying drivers. However, this seems difficult to implement (who would be in charge of such tests and on what criteria would they be based?).

All the same, we think that, in the future, we should at least require an invited pilot to have participated relatively recently in a Grand Prix.

10.4 Did the pressure of the competition push the pilots to take too many risks?
It is generally admitted that the pressure of the competition and the desire to win may lead pilots to take risks resulting in accidents. This does not, however, seem to have been the case here. Klaus flew on a practice day and was on final glide, high enough to land in Vitacura, he should not have been under pressure. Tomas had no reason to be stressed either. As shown on his flight record, he was nearly alone, well behind the leading group and flew very conservatively, taking no risk and trying to stay above 1400 meters all the time. He was flying “figures of eight” on the slope when he entered into what looks to have been a spin.

10.5 Were the tasks too challenging for the pilots?
After the competition, some voices criticised the task-setting which they considered over-challenged the competitors, by sending them sometimes to the highest parts of the Andes.

In the interview mentioned above, Sebastian Kawa, also found the task set for the last day too difficult since he wrote "*I didn't like the task to fly lower in weak conditions and put 20 gliders next to the rocks in dying thermal.*" However, task setting does not seem to have played a role in the accidents because they both happened close to Los Blancos, a slope located far from the high mountains (only 20km from Vitacura), According to the local pilots, it is not especially difficult to fly in this area because there is plenty of good thermal and slope lift, especially during the late afternoon. Additionally, it is possible to land out on one of the two landing strips located at the foot of this mountain. Clearly, neither Klaus nor Tomas were in trouble there, since Klaus was on final glide while Tomas managed to climb to 1670m just before his crash and was then higher than he was during the rest of his flight.

10.6 Did fatigue play a role in these accidents?

Sebastian Kawa also insinuated in the same interview with a Slovenian media outlet that the fatal accident could have been caused by fatigue by arguing that "f*atigue is deadly and it also has to be taken into account in SGP. In normal competitions, we have a rest day after 6 competition days. In Chile, it was supposed to be 9 days in a row*". The last sentence is untrue since the Chilean Final was supposed to take place from Saturday 13 January to Saturday 20 January, i.e over a duration of 8 days (which is the maximum allowed by the SGP rules). Additionally, Saturday 13 January and Monday 15 January had to be cancelled so the pilots, in fact, flew only 5 days in a row. Although all the tasks were quite challenging, this should not have exhausted some of them to the point of crashing. Interestingly, none of the pilots complained at any briefing about having to fly 5 days in a row. It is also worth mentioning that the Competition Director cancelled the official practice day scheduled on January 11 so those pilots who had flown in the Andes Open could take a rest day. Klaus Kalmbach must not have felt too tired since he was one of the few pilots who chose to fly on that day which ended with his accident.

10.7 Could pilots be flying with too high a wing loading in Grand Prix?

As mentioned above, all the significant accidents at Grand Prix have been related to mountain flying.

After the accidents in 2007 and 2009, the SGP Management Team decided to limit the wing loading in GP competitions to 50 kg/m^2 in the 15 M class and to 52 kg/ m^2 in the 18 M Class to increase the safety margin in mountain flying (and also to increase fairness).

This decision seemed to improve the situation since there were no accidents from 2009 to 2018. However, after the Chilean Grand Prix, some pilots stated that the 52 Kg/m^2 limitation is perhaps not stringent enough and that it would be safer to fly at a lower wing loading in mountains. In particular, Tilo Holighaus, who participated in the Chilean Final, wrote us the following:

"In Chile, I had the feeling we flew with too high wing loading in these often extreme dynamic and turbulent conditions. Of course, normally, nobody drops water before the essential final glide. The high wing loading reduces maneuverability and decreases the safety margin you need if you fly so close to the mountains or to other gliders. Sudden speed drops of 30 km/h or more were common and you needed to react immediately. Here you feel every kg/m^2. I think that in such conditions reducing the wing loading limit to 45-48 kg/m^2 would be more appropriate, giving us the safety margin we need without taking the fun, speed and dynamic out of our flying."

It is our opinion that Tilo is absolutely right. At the Final in Chile, Tomas took off every day at mass of 574 kg which is only 26 kg below the 600 kg allowed by the airworthiness certificate of his Ventus 2cM. We do not know if he was accustomed to flying with such a high wing loading or if he dumped water during the flight but if not, this relatively high wing loading may well have played a role in his accident.

We know that the wing loading limit is not very popular among the pilots. Most of them prefer to fly dynamically with a fully-ballasted glider. There is also a problem of fairness because some glider types are less competitive at low wing loading because they are optimised for higher wing loading. However, such arguments should not be taken into account because safety is paramount.

Personally we believe that limiting the wing loading to 45-48 kg/m^2 is the only measure we can take to improve safety during mountain flying. It is worth a try.

Roland Stuck

Referee of the 8th FAI World Sailplane Grand Prix Championship in Vitacura
12 February 2018