

Paragliding World Cup Association Competition Rules Season 2012



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Terms and Abbreviations

Throughout this document, we use the following terms and abbreviations:

MD – Meet Director

PWCA – Paragliding World Cup Association

TA – Technical Assistant

TD – Technical Delegate

World Cup – Paragliding World Cup

World Cup Association – Paragliding World Cup Association

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1 Preamble

1. The Paragliding World Cup Association (PWCA) is an association of pilots, the PWCA members.
2. The PWCA is a non-profit organization. All incomes are re-invested to improve future competitions.
3. The pilots' general assembly elects the PWCA committee according to the PWCA statutes.
4. Each pilot becomes a member of the PWCA by paying an annual subscription fee of 30 €.
5. The purpose of the Paragliding World Cup is to provide safe, sportive and fair flying, to determine the PWCA World Champions Overall, Female and Team.
6. All competition pilots in the world have the right to take part in World Cup events. The selection is based purely on sportive aspects.
7. All pilots fly under their own responsibility.
8. All pilots accept without restriction to hold the Organizers, PWCA, its bodies and members harmless and waive all claims for compensation.
9. All pilots participating in a World Cup event accept these rules in their entirety. In case of ambiguities, the spirit of the rule prevails.
10. Political and religious promotion is prohibited.

1.1 PWCA Contact

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1.2 Partners

1. Partners support the Paragliding World Cup Association with a subscription defined by the PWCA Committee.
2. Partners will be mentioned on the official rankings, on all results, on the backdrop during prize giving ceremonies, on banners, in World Cup videos, on the Paragliding World Cup web site, on each Email or document issued by the PWCA Office and in potential magazine advertising. Other sponsorship opportunities are available.

2 Paragliding World Cup Competitions

2.1 Duration

A World Cup event consists of one registration and training day, usually on Saturday, followed by 7 competition days from Sunday to Saturday.

2.2 Schedule

1. All events must be advertised from the registration day to the last flying day.
For example, World Cup Ager, August 20th – 27th:
Saturday, August 20th = registration.
Sunday, August 21st = first task.
Saturday, August 27th = last task and prize giving.
2. The Saturday registration time is by default 17h-20h. These times may change for organizational reasons.
3. The prize giving ceremony takes place on the last competition day or sooner in case of task cancellations.

2.2.1 Pre-World Cups, Opens

To coordinate the calendar and allow pilots to travel between events, all competitions (Pre-World Cups, Opens, etc.) are advised to start with registration on Sundays (6 days events) or Mondays (5 days events) and to end on Saturdays (last task and prize giving).

2.2.2 Rest Time

1. A minimum rest period of 8 hours should be available to 90 % of the pilots between GPS download after the task and transport departure to take off the next day.
2. In the Super Final, after 5 consecutive days of flying, except on the two last days, the following day will be a rest day. To adapt to the weather forecast, if necessary, this rest day can be postponed one day by the Meet Director and/or the Technical Delegate.
3. In the Super Final, in case of demanding flying conditions, an additional requirement for a rest day can be added to the local rules.
For example: "After 15 hours of airtime without a rest day for average pilots in goal, the following day will be a rest day"

2.3 Number of Tasks

1. After 6 tasks with a day quality of 1, an event is finished.
2. After 10 tasks with a day quality of 1, the Super Final is finished.

2.4 Participants

1. All competing pilots must be qualified to meet the demands of an international paragliding competition.
2. CIVL ID and FAI membership are only necessary in order to be included in CIVL rankings.

2.4.3 World Cup Events

1. The maximum number of participants is 125 pilots. This number includes up to 5 wildcards for the organizer, up to 3 wildcards for the PWCA and any partner wildcards (Partners are given one wildcard per year to be able to form a team).

2. Additional pilots can be selected for overbooking reasons.
3. A minimum of 10% of the places are reserved for female pilots.
4. Places of pilots not showing up at the competition cannot be taken by other pilots.
5. The World Cup Office will carry out the selection process as described in Appendix A.2.
6. Applications for wildcards must be submitted to the World Cup Office at least 10 weeks before the competition.

2.4.4 Super Final

1. The World Cup Office will carry out the selection process as described in Appendix A.3.
2. All former PWCA and FAI XC Paragliding world champions (overall and female) are invited.
3. The previous season's PWCA continental champions (overall and female) are invited.
4. The current FAI continental champions (overall and female) are invited.
5. Applications for wildcards as well as acceptances of Super Final invitations must be submitted to the World Cup Office at least 10 weeks before the Super Final.

2.5 Insurance

1. All participants must have third party liability insurance with a minimum coverage of 800.000 € or foreign currency equivalent.
2. All participants must also be insured to cover all types of expenses in case of an accident: search and rescue expenses, hospital expenses, medical expenses, repatriation, etc.
3. Pilots must check the validity of their government-run or private insurances in the country where the competition takes place. In some countries, it is strongly recommended to know the insurance company's local contact to avoid delays.
4. It's the pilot's responsibility to ensure his own insurance coverage is adequate.

2.6 Local Regulations

1. Local regulations are the rules prepared by an organizer.
2. Local regulations are not encouraged and must not conflict with PWCA rules.
3. Local regulations must be submitted at the time of the bid for approval by the PWCA and the TD.
4. They will be published on the World Cup web site.

2.7 Official Language

The official language for all PWCA competitions is English.

2.8 Ecology

1. The PWCA, pilots and organizers, are aware of the global ecological impact of paragliding competitions.
2. To limit this impact, the World Cup format has been updated to reduce the number of international flights.
3. Other actions:
 - Pilots are encouraged to share transports when possible. This can be done on the PWCA travel forum: <http://www.paraglidingworldcup.org/forum>.

- When available, reusable plastic bottles will be offered to the pilots for free. Organizers must inform about the water quality and the places to refill the bottles (this can save more than 1500 plastic bottles each week).
- As far as possible, lunch packets must be prepared (possibly in the take-off area) with a minimum of disposable and packing material.
- The quantity of printed documents must be reduced. For example, tourism leaflets and brochures must be made available to pilots only on request and returned when not used.

3 Pilot Equipment

3.1 Gliders

1. Pilots are responsible for the choice and maintenance of their flight equipment.
2. Pilots must fly with the same glider during one event. In special cases (lost luggage, damaged equipment, etc.) the TD can allow a glider change during the event.
3. Only certified gliders are allowed in World Cup competitions up to EN 926 or LTF 91/09. It is not permitted to modify the glider in any way, except for the length of the brake main-line.
4. The pilot must fly in the homologated weight range.
5. Uncertified sizes of a certified model that was available for sale earlier than 1st November 2011 will be permitted.
6. On registration, pilots have to specify the model, size and serial number of the glider to be flown during the competition.
7. Gliders will be checked after a complaint. In addition, the MD or TD can request that any pilot be checked. Every pilot must give his glider to the organisation for checking or comparing immediately upon any such request.
8. The TD will nominate a skilled person to check.

3.2 Communication Equipment

1. Radios (2 metre band) are mandatory for all pilots and must be used for safety purposes only.
2. All pilots' radios must be tuned to the safety frequency announced at task briefing.
3. The use of voice-activated microphones ("VOX") is prohibited.
4. All pilots must carry a mobile telephone with them while flying.
5. Pilots not fulfilling these requirements can be grounded or penalized.

3.3 GPS Receiver

1. GPS is the only evidence used for flight verification in Paragliding World Cup events.
2. All pilots must be equipped with at least one GPS receiver with GPS altitude recording capability. Only some specific models are accepted (see section 14.9 and Appendix E: GPS Receivers).
3. It is the pilot's responsibility to have at least one working GPS receiver, and to set it up with the right parameters.
4. Pilots must bring their GPS receivers to report-back after each task in order to download their flight tracks.

3.4 Live Tracking

1. The PWCA provides a Live-Tracker for each competitor as a safety measure to know at all times where they are whilst flying.
2. Each competitor must take the Live Tracker at take-off, and he must carry it on his person whilst flying and whilst being retrieved.
3. Any competitor that does not take his Live Tracker will be deemed not to be flying that day and will not score any points.
4. A pilot who does not return his Live Tracker may be not be displayed on score sheets until it is returned.

3.5 Protective Equipment

Every competitor must wear a protective helmet and carry an emergency parachute during all flights.

3.6 Pilot Number

1. Each glider must be equipped with a competition number which is black, has a vertical height of 500 mm and a line width of 50 mm, fixed in the centre of the lower surface near the leading edge.
2. Only the TD can allow a number of different colour, size, or fixed in a different place. Stickers for numbers are provided free of charge at the first registration.
3. The numbers 1 to 200 are reserved for pilots that competed in the previous Super Final and are taken from the pilot's position.
4. Above number 200, pilots will be assigned a number when they are selected and when they have paid.
5. A pilot can request a different number until 15 days before the first event in which they are competing. To do so, go to <http://www.paraglidingworldcup.org>, log in and fill up the "Requested number" field in your Paragliding ID Card.
6. Once a pilot has competed in an event, their number is fixed for the remainder of the season.

3.7 World Cup Sponsors Equipment

1. The PWCA may provide logos or equipment (for example speed arms, stickers, etc.) to promote World Cup partners or the Paragliding World Cup itself.
2. In this case it is compulsory to wear this equipment, without covering these logos on purpose. In case of conflicts with personal or team sponsors, exceptions can be given by the TD for a single event or by the Committee for the whole season.
3. This equipment is provided by the World Cup Office, free of charge, after payment of the PWCA membership fee.

4 Rankings, Titles and Trophies

4.1 Number of Tasks for Competition Results

4.1.5 World Cup Events

There are no discards in individual World Cup events.

4.1.6 Continental Cups

1. Continental overall and female rankings will be scored with the Fixed Total Validity scoring (FTV), as described in Appendix D: Fixed Total Validity (FTV).
2. The FTV "reject rate" is set to 33% (equivalent to the former discard system with 1 discard out of 3 tasks).
3. Team and country continental results are calculated as the sum of the scores in all events.

4.1.7 Super Final

1. Overall and female rankings will be scored with the Fixed Total Validity scoring (FTV), as described in Appendix D: Fixed Total Validity (FTV).
2. The FTV "reject rate" is set to 25% (equivalent to the former discard system with 1 discard out of 4 tasks).
3. Team and country results are calculated as the sum of the scores in this event.

4.2 Team Ranking

1. "Team" stands for PWCA partners' or any other team entering a World Cup event. This must not be confused with national teams.
2. A team is composed of 3 pilots plus one possible additional female pilot. These pilots can change from one event to another. One pilot can only participate in one team during a competition.
3. The entry fee for a team is 1000 € for the season, 250 € per event or 500 € for the Super Final. PWCA partners can enter one team for free. Additional teams for PWCA partners are 500 € for the whole season.
4. Incomplete teams can enter an additional pilot during a competition. Injured team pilots can be replaced. New pilots score only from the day they are added to the team. Team composition must be submitted before the task is flown.
5. Each team can be sponsored by one manufacturer and/or sponsor. Team names are chosen by the teams. Names can be adapted or changed during the season. Changes must be submitted to the score keeper at the beginning of the event.

4.2.8 Team Scoring

1. The position in the overall task ranking of each team's second pilot will decide the team ranking.
2. The winning team in a task receives 20 points. The last team receives 1 point.
3. The distribution of points between those positions depends on the number of teams entered in the competition, as defined in Table 1.
4. The competition result is the sum of the team's points for all tasks regardless of task validity.

Teams	1st	2nd	3rd	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 - 10	20	17	15	13	11	9	7	5	3	1										
11	20	17	15	13	11	9	7	5	3	2	1									
12	20	17	15	13	11	9	7	5	4	3	2	1								
13	20	17	15	13	11	9	7	6	5	4	3	2	1							
14	20	17	15	13	11	9	8	7	6	5	4	3	2	1						
15	20	17	15	13	11	10	9	8	7	6	5	4	3	2	1					
16	20	17	15	13	12	11	10	9	8	7	6	5	4	3	2	1				
17	20	17	15	13	12	11	10	9	8	7	6	5	4	3	2	1	1			
18	20	17	15	13	12	11	10	9	8	7	6	5	4	3	2	2	1	1		
19	20	17	15	13	12	11	10	9	8	7	6	5	4	3	3	2	2	1	1	
20	20	17	15	13	12	11	10	9	8	7	6	5	4	4	3	3	2	2	1	1

Table 1: Points for Teams

4.3 Country Ranking

1. The task result of a nation is the sum of the 3 best pilots' scores flying for the same country.
2. The competition result is the sum of the country's points for all tasks regardless of task validity.
3. The status of the country ranking is under review. It may be deleted in the future.

4.4 Titles

4.4.9 World Cup Events

The winners of World Cup events are awarded the following titles:

- "Event" World Cup Winner
- "Event" World Cup Female Winner
- "Event" World Cup Team Winner
- "Event" Best Country

4.4.10 Continental Cups

The PWCA continental Cup winners are awarded the following titles:

American Cup

- PWCA American champion
- PWCA American Female champion
- PWCA American Team champion
- PWCA American best country

Asian/Oceanic Cup

- PWCA Asian/Oceanic champion
- PWCA Asian/Oceanic Female champion
- PWCA Asian/Oceanic Team champion
- PWCA Asian/Oceanic best country

European Cup

- PWCA European champion
- PWCA European Female champion
- PWCA European Team champion
- PWCA European best country

4.4.11 Super Final

The winners of the World Cup Super Final are awarded the following titles:

PWCA World champion
PWCA Female World champion
PWCA Team World champion
PWCA World best country of the year

4.5 Trophies

4.5.12 World Cup Events

Awards, material prizes, certificates, etc., for each event must be provided by the event's local organizer.

4.5.13 Continental Cups

Trophies for the first 3 pilots, the first 3 female pilots, the first 3 teams and the best country are awarded by the PWCA.

4.5.14 Super Final

Trophies for the first 3 pilots, the first 3 female pilots, the first 3 teams and the best country are awarded by the Super Final organizer.

5 Meet Director, Technical Delegate, Task Committee

5.1 Meet Director

1. The Meet Director's first prerogative is to manage ALL sportive aspects during the event.
2. He is responsible for applying the rules.
3. He must consult with the Technical Delegate at all times.
4. He shall present the task chosen by the Task Committee at the Task Briefing.
5. It is the responsibility of the Meet Director to inform himself as fully as possible of the issues affecting all safety elements during the task.

5.2 Technical Delegate

1. The Technical Delegate is responsible for controlling all sportive aspects of the competition
2. The Technical Delegate has a right of veto on sportive grounds
3. The Technical Delegate ensures that the rules are applied correctly
4. The Technical Delegate is member of the Task Committee.
5. The Technical Delegate can apply a penalty if he has the written support of one Committee member to do it.

5.3 Task Committee

1. The Task Committee consists of:
 - a. The Meet Director (MD)
 - b. Two pilots elected by the competition pilots
 - c. One pilot appointed by the PWCA to provide local knowledge
 - d. The Technical Delegate (TD)
2. The elected pilots should have sufficient knowledge of the flying site and the World Cup rules. They must submit their candidature before the local registration.
3. The task should be unanimously agreed by the Task Committee.
4. The Task Committee chooses take-off areas and the task of the day according to safety, meteorological, technical and sportive criteria.

6 Briefings

All briefings must be in English only.

6.1 General Briefing

1. All competitors must be present at the general briefing, which will take place as announced by the Organizer.
2. The main information given at this briefing must also be displayed in English on the official board.
3. The General Briefing, including the safety briefing, usually takes place at take-off before the first task briefing.

6.2 Task Briefing

1. The task briefing is held at the take-off area. All technical data specified during this briefing is displayed on the task board.
2. To avoid stress and to guarantee good and fair preparation for all pilots, provisional tasks should be displayed as soon as possible
3. There must be sufficient time (minimum 15 minutes) between the task briefing and the window opening. When necessary, taking into account all other parameters (start time, unchanged provisional task, conditions, etc.), the window may be opened earlier

7 Display of Results

1. A provisional results list must be put on the official results board and the website as soon as possible. Small errors should be submitted for correction as soon as possible to the score keeper.
2. By default, the results timing is:
 - a. Within one hour after the end of the GPS download: display of the provisional results.
 - b. By 10h00 the following day: written complaints (in English) handed to the Meet Director or Technical Delegate.
3. This timetable can be adjusted by each organizer.
4. The official task & competition results are displayed when all complaints have been dealt with.
5. The maximum time window for complaints on the last competition day is 30 minutes after the publication of provisional results.

8 Complaints, Protests and Appeals

Complaints, protests and the related decisions must be displayed by the event organization on the official information board, with the display time clearly marked on each document.

8.1 Complaints

1. Any pilot participating in a PWCA event can make a complaint, a protest or an appeal.
2. Complaints must be made in writing, in English, and must be handed to the Meet Director or the TD.
3. Complaints must be made within the fixed timetable after the announcement of the provisional results (see section 7 Display of Results).
4. The Meet Director deals with complaints.

8.2 Protests and Jury

1. If the complainant or any participant in the PWCA event impacted by a complaint is not satisfied with its outcome, he has the right to protest.
2. Such a protest must be made in writing, in English, and be handed to the TD or MD with a protest fee of 60 € (or equivalent in local currency) within 2 hours (30 minutes for the last task) of the publication of the decision regarding the complaint.
3. The jury will deal with the protest, and may decide to refund the protest fee.
4. The jury is composed of all World Cup Committee members present at the competition, except the PWCA President and those Committee members involved in the protest.
5. The TD has a consultative voice in the jury.

8.3 Appeals

1. Any pilot participating in a PWCA event can make an appeal concerning any jury decision.
2. The appeal must be made in writing, in English, and sent to the World Cup office within one week, together with a 120 € appeal fee and accompanied by any documents relevant to the case.
3. The appeal will be dealt with by the Appeal Committee during the next PWCA Committee meeting.
4. The Appeal Committee will deal with the Appeal and may decide to refund the appeal fee.
5. The Appeal Committee will consist of the World Cup President and at least 2 PWCA members (pilots or committee members) appointed by the World Cup Committee, none of them being from the parties involved.
6. All interested parties may be present at the hearing. They must be given notice of the appeal in good time and shall have the right to call witnesses, their absence shall not hold up the appeal.
7. The Appeal Committee has full power to make the final decision.
For example, the Appeal Committee's powers include, but are not restricted to:
 - Change ranking lists in case of obvious errors
 - Invalidate a task for a Tour ranking in case of severe infringement of World Cup rules
 - Change a jury decision in case of an appeal lodged against a jury decision as well as making a decision in case of jury failure
 - Decide on refunding any of the deposit and the apportionment of the costs of the appeal

9 Flying and Safety Regulations

9.1 Compliance with the Law

Each competitor is required to conform to the law and rules of the air of the country in which a PWCA event takes place.

9.2 Flight Limitations

1. All gliders must be flown within the limitations of its manufacturer's specifications. Any manoeuvre hazardous to other competitors or third parties is prohibited.
2. A pilot can be prohibited by the MD or the TD from competing or flying for safety reasons.

9.3 Damage to a Glider in Competition

1. Any major damage must be reported to the TD without delay, and the glider may then be repaired.
2. Any replacement parts must conform exactly to the original specifications.
3. A glider may only be replaced if permission is given by the TD. Reasons for a replacement are damage, loss or theft beyond the control of the competitor.
4. The TD may allow resumption of the original glider after it is retrieved or repaired.

9.4 Fitness

1. A pilot may not fly unless he or she is fit.
2. Any injury, drugs or medication taken which might affect the competitor's performance must be reported to the Meet Director before flying.
3. The MD in accordance with the TD will decide if the pilot will be allowed to fly.

9.5 Collision Avoidance

1. Circuit, turn directions and landing patterns given at the briefing must be complied with. Usually the turn direction is right on even, left on odd days.
2. International collision avoidance regulations must be obeyed and proper look-out be kept at all times.
3. A glider joining another glider in a thermal shall circle in the same direction as that established by the first glider in the thermal, regardless of height separation.
4. A competitor involved in a mid-air collision must not continue the flight if the structural integrity of the glider is in doubt.

9.6 Cloud Flying

1. Cloud flying is prohibited (see section 15.1 Penalties).
2. Cloud flying is defined as any part of the glider or the pilot disappearing from the view of observers or pilots close to him or her.
3. It is the responsibility of the competitors to report cloud flying to the MD or the TD.

9.7 Altitude Control

1. Altitude control will be done using GPS altitude only.
2. A progressive penalty will be set (see section 15.1 Penalties).

9.8 Ballast, Take-off Weight

1. A competing glider may carry jettisonable ballast only in the form of fine sand or

water.

2. A competitor must avoid dropping ballast in a manner likely to affect other competing gliders or third parties.
3. A competitor's take-off weight, including all flight equipment and the glider, must not exceed the pilot's body weight by more than 33 kg.

9.8.15 Weight control

1. Pilots should specify their weight as they register on the website. This weight can be checked at the event registration by the staff and corrected in the database.
2. The pilot's body weight is defined as body weight when dressed in jeans, shirt, underwear and boots.
3. Pilots may volunteer to check their weight (at registration or on take-off) and adjust their weight (before task briefing).
4. The pilots may be checked before taking off or after landing. If there is any doubt, their nominal weight will be checked again immediately.
5. If their all-up weight is out of their glider's weight range, they will be penalized without tolerance on the measurement.
6. If they are carrying over 33 kg of equipment, including ballast, they will be penalized without tolerance on the measurement.
7. The weight measurement machine will be located close to the launch gate;
8. The organiser should provide an inflexible horizontal platform with a minimum size of 100cm x 100cm.
9. The Organiser or TD should have a list of pilots at the take off with their nominal weight and the weight range of their wing.

9.9 External Aid to Competitors

Any external help while flying in navigation or thermal location is prohibited (see section 15.1 Penalties). This is to ensure as far as possible that the competition is between individual competitors, neither helped nor controlled by external aids.

10 Take-off

1. The organization assumes that all registered pilots will fly each task.
2. All pilots intending to fly must take a live-tracker. Pilots who do not take a live tracker are deemed not to be flying the task and will score zero points for the day.
3. If a pilot decides not to fly, he must notify the organizer before the mandatory safety report-back deadline. Failure to do so may result in a pilot penalty as defined in section 15.
4. A pilot who decides not to fly should hand back his live-tracker at launch. If he does not do this, he must follow normal check-in procedures at Headquarters.
5. All pilots must be able to perform safe and controlled launches. If a pilot does not succeed in launching in a reasonable time, he may be removed from launch by the TD/MD.

10.1 Launch Procedure

10.1.16 Ordered Launch

1. When necessary, a priority system can be used: all pilots must enter through one gate in the order of the last available ranking (Top 30, 40, 50, etc ... or one by one if necessary). This will be defined by the Task Committee and displayed on the Task Board.
2. Pilots who do not enter the take-off area when they would be allowed to, keep their right to enter at any later time.

10.1.17 Launch Window

1. Window Opening and closing times are announced at the task briefing and displayed on the task board.
2. The window should be as long as possible, to allow all pilots to take off even in case of a temporary window closing (e.g. for a helicopter rescue) or to give time to repair broken lines.

10.1.18 Re-launch

1. In the case of a major problem occurring immediately after take-off, a pilot may ask permission from the Meet Director or the TD to land, resolve the problem, and take off again.
2. In the case of a re-launch, pilots do not lose their priority rights in an ordered launch.

10.2 Free Flyers and Wind Dummies

1. Free flying is allowed, but those pilots may be asked not to take off during short times for safety reasons.
2. Wind dummies must be ready to take off before the window opening on organizer request.
3. Free flyers and Wind dummies must not provide voluntary help to competitors for reasons of fairness (see section 9.9 External Aid to Competitors).

11 Landing, Report-back and GPS Track Download

1. During a task, touch and go and take-off after landing are forbidden. If a pilot wishes to re-fly, then he must ensure that the correct flight is used for scoring.
2. All pilots must pack their glider immediately after landing. A glider lying open on the ground means "I need help" (see Appendix B: Rescue Actions in Competitions).

11.1 Mandatory Safety Report-Back

1. It is each pilot's responsibility to report back every task day, whether they fly or do not fly.
2. When using the Fast Retrieve® system (designed by Chris Trow, www.fastretrieve.com), report-back must be done immediately by SMS to the number given during briefing and indicated on the task board.
3. The format of the message is as follows:
<pilot number(s)> <UTM coordinates> <optional message>
Example: If pilot 174 wants to report landing, together with 3 other pilots (21, 73 and 411), the message would be: "174 21 73 411 0725738 5020845 waiting at the bar"
4. The system will respond with "Received and plotted". When a bus is assigned to a pilot, a text will be sent with the details.
5. Other possibilities to report back will be indicated at the briefing and on the task board. These may include telephone, radio, or physically at take-off, in retrieve buses, at headquarters and in goal.
6. All pilots must report back as soon as possible, even before packing his glider (usually within 20 minutes after landing), including the ones landing in goal. The later a pilot lands, the faster he must report back.
7. GPS track download is not a way to report back.
8. A pilot can be penalized for reporting back late. In case of unnecessary search and rescue operations caused by a pilot reporting back late, the penalty can be up to disqualification from the event and possible S&R costs at the expense of the pilot.

11.2 Check-in at Headquarters

1. All pilots who fly the task must hand in their live-trackers by the check-in deadline written on the task board.
2. Handing in the live-tracker constitutes check-in and is the organisation's guarantee that the pilot has safely returned to base.

11.3 GPS Track Download

1. GPS track download is mandatory for all pilots flying the task.
2. Each pilot must do the GPS track download as soon as possible.
3. When a deadline is set (e.g. on the last competition day), pilots presenting their GPS receiver for download after this deadline may not be scored for the task.
4. A maximum of 2 GPS receivers to be checked for pilots reaching goal with no problem in their recorded track log may be enforced.

12 Tasks

The World Cup uses five task formats.

12.1 Timed Tasks

1. In all timed tasks the course is the same for all pilots.
2. The course starts at take-off, passes around zero or more turnpoints, and terminates at the goal.
3. Part, or all, of this course is designated as the speed section.
4. The objective is to fly around the course and, in the process, along the speed section in the shortest time.
5. The task distance is the shortest distance around the course.
6. If a pilot fails to complete the course, then the distance awarded to the pilot is the task distance minus the shortest distance from his best position around any remaining turnpoints to goal.

12.1.19 Race to Goal

1. A Race task uses a single start time.
2. The first pilot to complete the speed section has the shortest time.

12.1.20 Clock Start

1. A Clock Start task uses multiple start times, normally at fixed intervals.
2. A pilot's start time is defined as that start time after which he starts the speed section for the last time, to continue and fly the task.

12.1.21 Elapsed Time

1. An Elapsed Time task gives an individual start time to each pilot.
2. A pilot's start time is taken when he crosses the start for the last time, to continue and fly the task.
3. A start opening/closing time and last start time can optionally be set.

12.2 Distance Tasks

1. In all distance tasks the aim is to fly the longest distance.
2. The course can start with one or several turnpoints.

12.2.22 Free Distance in a Sector

1. The objective is to fly as far as possible from the take-off or the last turnpoint within a predetermined sector.
2. Distances are calculated as the shortest distance from take-off, around any turnpoints, and thence to the point in the tracklog most distant from the last turnpoint.

12.2.23 Free Distance on an Axis

1. The objective is to fly as far as possible along a predetermined axis from the take-off or the last turnpoint.
2. Distances are calculated as the shortest distance from take-off, around any turnpoints, and thence to the most distant of points on the axis obtained by perpendicular projection of the points of the tracklog onto the axis.

12.3 Task Deadline

1. A task deadline is set to give enough time for search and rescue at the end of the day, or to avoid forecasted bad weather.
2. In this case, each pilot's best position up until the task deadline will be used for scoring.

13 Turnpoints, Cylinders, Start and Goal

13.1 Turnpoints

1. All turnpoints are given as GPS coordinates.
2. The list of turnpoint coordinates must be uploaded onto each pilot's GPS receivers from the score keeper's computer during event registration.
3. It is not acceptable to use turnpoints from any other source – even from the organiser's own website.
4. Organizers can change or add co-ordinates during the event. In this case the changes will be announced at the task briefing and displayed on the task board.
5. The official map datum is WGS84, and position format is UTM. For safety reasons and to facilitate communication, pilots must set their GPS receivers to WGS84 and UTM to be able to provide coordinates in the right format at any time. This also avoids mistakes when manually entering new coordinates.

13.2 Cylinders

1. Cylinders are defined as a circle on the WGS84 ellipsoid, projected upwards to an infinite altitude. The walls of a cylinder are therefore vertical.
2. Cylinders are drawn around a central point which is a turnpoint specified by the task-setters.
3. Cylinder radius can vary for each cylinder, even within the same task when a turnpoint is used multiple times. Defining the cylinder sizes is part of task setting.
4. A cylinder can have an opening time and a closing time. A cylinder can only be validated after the opening time and before the closing time.
5. Each cylinder can either be an **entry** or an **exit** cylinder. An entry cylinder is validated when a pilot enters it and an exit cylinder is validated when a pilot leaves it.

13.3 Start

1. All information concerning the start definition will be announced during the task briefing and displayed on the task board.
2. Two types of start are available.

13.3.24 Ground Start

1. In the case of a race to goal task, the race starts when the window opens.
2. In the case of a clock-start or elapsed time task, it will be necessary to determine the launch time of each pilot. This can either be recorded by marshals, or it can be automatically determined from the GPS tracklog. In this case the pilot needs to turn on their GPS at least two minutes before taking off to store at least four points at take off immediately before they leave the ground. If there is no valid recording of a pilot's start time, the window opening time will be applied to that pilot.

13.3.25 Air Start

3. An air start is either an entry cylinder or an exit cylinder.
4. An entry start cylinder is used when the next turnpoint is inside the start cylinder.
5. An exit start cylinder is used when the next turnpoint is outside the start cylinder.
6. In the case of a race to goal task, the start cylinder opens at a pre-determined time. The start cylinder is validated as follows:
 - a. In the case of an entry cylinder, the pilot must have at least one point in his

- tracklog outside the cylinder after the opening time (and before the closing time, if applicable).
 - b. In the case of an exit cylinder, the pilot must have at least one point in his tracklog inside the cylinder after the opening time (and before the closing time, if applicable).
 - c. If the pilot does not satisfy these requirements, then the pilot will be scored back to the start cylinder.
7. In the case of a clock-start or elapsed time task, if the start cylinder has an opening or closing time, then it is validated in the same way as in a race task. But, in addition, the pilot's individual start time is determined as follows:
- a. A pilot's individual start time is calculated from the last time the pilot crossed the cylinder in the direction defined by the task (enter or exit).
 - b. If there is no valid recording of a pilot's start time, then the pilot will be scored back to the start cylinder.
 - c. A last start time may be set. In this case, if the pilot crosses the start for the last time after this time, his individual start time will be set to the last start time.

13.4 Goal

1. By default, the World Cup goal is a goal line.
2. The virtual goal line extends to 200 m each side of the GPS goal coordinates, to a total of 400 m, and is perpendicular to the line between the goal point and the previous turnpoint.
3. The virtual goal line is validated when a line drawn between two adjacent points in the pilot's tracklog cross the virtual goal line in the correct direction and within 200m of the centre coordinates.
4. If present, a physical line should be at least 50 m long and 1 m wide.
5. The physical line must match as closely as possible the virtual line and should not be further from the previous turnpoint than the virtual line.
6. The physical line is validated when the pilot is observed by a goal marshal to have physically crossed it. The pilot needs to fly further than the physical line or at least land on it.
7. A pilot is deemed to have reached goal if either the virtual line or the physical line is validated.
8. Pilots not crossing the goal line will not score time points.
9. For safety, or other reasons, a cylinder may be used instead of a goal line; this must be explained at the briefing and displayed on the task board. In this case there is no physical equivalent
10. Pilots should not take any risk to cross the goal line. Not crossing a goal line for obvious safety reasons will be considered in favour of the pilots.
11. Organizers should use physical lines as often as possible for several reasons (goal visualisation, safety, public, media, etc.).
12. For public and media reasons, pilots are asked to cross the goal line in the same order as the time cylinder.

13.5 End of Speed Section

1. The end of speed section may be:-
 - a. The goal line itself. In this case the pilot's finishing time is taken when he crosses the virtual line and he will receive Altitude Arrival Points based upon his GPS altitude when his cross the line (see Appendix C.6.4 Altitude Arrival Points).

- b. An entry cylinder centred on the goal coordinates (1000m by default). In this case, the pilot's finishing time is taken when he enters the cylinder. After that, the pilot must validate the goal to complete the task.
- c. Another turnpoint. In this case, the pilot's finishing time is taken when he validates that turnpoint. After that, the pilot must validate the goal to complete the task.

13.6 Crossing Times

1. Crossing times of SSS/ESS cylinder boundaries and goal lines are determined from the pilot's tracklog.
2. The actual crossing time is found by interpolating between the timestamps of the last tracklog point before crossing and the first tracklog point after crossing.

14 Task Evidence

14.1 Source

1. Data will only be collected directly from a GPS receiver.
2. IGC files are also accepted if they are digitally signed by the GPS unit itself.
3. Only valid GPS data will be considered as true evidence. Data may also be collected from data loggers, but in such case, a GPS receiver may also be requested to verify the data logger's data validity.
4. No copies of files, or files from any other source will be accepted as evidence for a flight.
5. Track log data is public.

14.2 Valid GPS Data

1. To be considered as valid, the track log must satisfy the following criteria:
 - a. The track log must show at least 2 minutes of data and at least 5 continuous track points prior to and after the track log points used to verify a turn-point or start.
 - b. The track log must show at least 2 minutes of data and at least 5 continuous track log points prior to landing.
 - c. The track log must have valid and consistent time stamps as well as GPS altitude recording.
 - d. A continuous track log is one where each consecutive point is 20 seconds or less from its predecessor.
 - e. Partial tracks from several GPS receivers can be combined to create a valid track.
2. GPS data validity is verified by the GPS software.
3. In order to fully benefit from Leading Points (see Appendix C: PWCA Scoring Formula), it is recommended to record entire flights.
4. In some particular cases, where forbidden or dangerous areas exist, the Meet Director can require the pilots to provide a continuous track log that shows that they did not fly into the unauthorized area.

14.3 GPS Software

1. The GPS software used by the PWCA is CompCheck® (designed by Ulric Jessop).
2. The software is able to check positions in relation with times.
3. The software is also able to check
 - a. Departure time during starts
 - b. Cylinder crossing for air start and turnpoints
 - c. Landing place
 - d. Arrival Time
 - e. The best position reached by the pilot during the flight
 - f. Best positions at a fixed time (when stopping a task in the air)
 - g. Airspace infringements
 - h. Reserve deployments

14.4 Measurement of Distances

1. All geographical points (turnpoints and tracklog points) are projected onto a plane using the Transverse Mercator projection of the WGS84 ellipsoid with a scaling factor optimised for a task area 100km wide.
2. Distance between points is simply obtained by using Pythagoras's Theorem. This is within a metre of precise geodetic calculations over a 100m wide task area.
3. All other geometrical calculations are carried out using simply planar trigonometry.

14.5 GPS Checking Criteria

1. For the start cylinder, at or after the start time, the track log must show at least one point outside the cylinder in the case of an "Enter" cylinder, or at least one point inside the cylinder in the case of an "Exit" cylinder.
2. For each turnpoint claimed, the track log must show one of the following:-
 - a. At least one point inside the cylinder for "Enter" cylinders, or at least one point outside the cylinder for "Exit" cylinders
 - b. A pair of consecutive points (in a continuous tracklog) whose connecting line passes through the cylinder.
3. Manually marked waypoints (Mark + Enter on Garmin GPS receivers, for example) are not considered as track evidence.
4. A tolerance of 0.5% is applied to all cylinder radii to deal with different formulas used in GPS receivers and computer software to calculate distances.

Example: On a 400m cylinder, this gives a 2 m tolerance.

14.6 Best Position

1. Pilots will be scored for their best position reached in the task. The best position can be the landing place, or a better position reached in the air.
2. Definition of the best position: The tracklog point with the shortest optimal route through all remaining cylinders and to goal (not necessarily the one closest to the next turnpoint).

14.7 Pilot's Responsibility and Management of the GPS Receiver

1. Pilots can have multiple GPS receivers and data loggers.
2. Pilots need to set their GPS receiver and data logger to the right parameters to record their flight.
3. Pilots may need to erase their previous track before every new task. Pilots accept all the sportive consequences if they forget to do so.
4. In case of GPS receiver or data logger failure (software or hardware), dealing with this problem is the pilot's responsibility.
5. Each pilot certifies that he provides his or her own track log at GPS track download. The organization may cross-check several track logs.
6. It is each pilot's responsibility to ensure that a track point is recorded to prove completing each portion of the task.

14.8 GPS Handling after Landing

1. If a pilot lands somewhere other than at goal, GPS receivers and data loggers must be switched off immediately after landing.
2. In case of a second flight, it is the pilot's responsibility to make sure he is not recording additional data in his GPS recording. If this happens, his first (and official) flight data may be overwritten.

3. The above does not hold true for newer devices which detect landings and create individual track files for each flight.

14.9 GPS Receiver Models

1. Only GPS receiver models listed in Appendix E: GPS Receivers, or devices compatible with those, are accepted by the PWCA.
2. GPS receivers used in the World Cup must be capable of recording GPS altitude, and must include this information in the track download.
3. USB-based GPS are only accepted if they comply with the USB Mass Storage standard and the IGC file format standard.
4. Upon request, all pilots must be able to provide a cable for downloading tracks from their particular GPS receivers.

15 Penalty and Compensation

15.1 Penalties

1. Modified glider: zero points for the task, disqualification from the event on a second offence.
2. All-up weight outside certified weight range: zero points for the task, disqualification from the event on a second offence.
3. Equipment in excess of 33 kg: zero points for the task, disqualification from the event on a second offence.
4. Cloud flying: zero points for the task, disqualification from the event on a second offence.
5. Airspace infringement, horizontal or vertical: 10 points per metre of infringement up to 50 m; zero for the day after that.
6. Track log missing or non-continuous track log when continuous track log is required: zero points for the task.
7. Failure to report back, or late report-back after a task: up to disqualification from the event.
8. No number, wrong number or number not meeting the requirements: 100 points penalty per task.
9. Failure to wear official sponsor logos or equipment: up to 100 points penalty per task.

15.2 Compensation Points

1. Pilots taking part in a rescue action will be awarded compensation points.
2. This compensation is evaluated by the MD and TD according to the position of the pilot at the time of the rescue and what results he could have achieved.
3. In case this evaluation is not possible, for example at the beginning of the task, the pilot's ranking in the previous tasks (or eventually in the next tasks) will be taken into account. In any case, the pilot must not lose any ranking because of his rescue action.

16 Task Validation

Task validity is mainly dealt with by the scoring formula (see Appendix C: PWCA Scoring Formula), taking into account the number of pilots who launched, the distances flown and the time spent in the air.

16.1 Launch validity

1. In addition to the launch validity calculated by the scoring formula, a task is only considered valid if the launch window was open for more than 30 seconds per enrolled competitor and per simultaneous take-off possibility (decided by MD and TD).
2. Enrolled competitors in this context means all originally enrolled less those disqualified or officially withdrawn.

16.2 Stopped Tasks

1. The Meet Director and/or the Technical Delegate can stop a task for safety reasons.
2. Task stopping is announced on the radio safety frequency.
3. For a stopped task to be scored there must be at least one hour of flying time after the start for Race to Goal, or one hour after the Last Start Time for all other race types. The Last Start Time is the time that the last pilot started or the Last Start Time defined for the task, whichever is the earliest. If a Last Start Time is not defined, and some pilots have not started, then the task cannot be scored.
4. Valid stopped tasks will be scored taking into account "Stop Validity" (see Appendix C: PWCA Scoring Formula).
5. Pilots who were at a position between End of Speed Section and Goal at the time a task was stopped will be scored for their complete flight, including the portion flown after the Task Stop Time.
6. If a task cannot be scored correctly, it will be cancelled.

16.2.26 Stopped Clock Start, Elapsed Time or Free Distance Tasks

1. In the case of a Clock Start, Elapsed Time or Free Distance task, pilots will be scored with their best position after the "minimum available flying time".
2. "Minimum available flying time" is the time between the Last Start Time and the task stop time.

Example: In a Clock Start task, some pilots use the last start at 14:00. The task is stopped at 16:12. The "minimum available flying time" is 2 hours 12 minutes. Therefore, pilots who took the start at 13:30 will be scored for their best position reached up until 15:42.

16.2.27 Altitude Compensation

1. In stopped tasks, pilots receive altitude compensation, based on their GPS altitude above goal at stop time.
2. The glide ratio used to calculate altitude compensation is 2:1.
3. For scoring, either the best position before stop time, or the altitude compensated position at stop time is considered, whichever gives the bigger distance.

16.3 Cancelled Tasks

1. After the last landing time, a task can only be cancelled by a jury decision. The TD and/or the MD can ask for a jury decision on the validation of a task.
2. A complaint can be made to ask for task cancellation.

17 Score Sheets

1. The Organizer publishes a score sheets for all competing pilots.
2. The score sheet must show at least:-
 - a. Name of pilot, nationality, glider, team (except in case of due invoices) and sponsors
 - b. Distance flown
 - c. Start time
 - d. Time when reached the End of Speed Section
 - e. Duration of flight inside the Speed Section (between Start and End of Speed Section)
 - f. Sum of points awarded
3. Score sheets will be produced in several categories including, but not necessarily limited to: Overall, Women, Teams and Continental.
4. Score sheets will be published immediately on the internet as soon as they are available.

18 Prize Giving

18.1 World Cup Events

1. It is mandatory for World Cup pilots to be present at the prize giving ceremony if they achieve a position for which prize money is to be awarded.
2. Pilots who do not respect this rule will not receive prize money.

18.2 Super Final

1. Taking part in the Paragliding World Cup Super Final is an honour and a great achievement.
2. Prizes and trophies will be awarded to the winning teams and pilots.
3. Top 100 pilots will be honoured at the prize giving ceremony.
4. For media and marketing reasons, presence is mandatory for all pilots.
5. Pilots who do not respect this rule may lose their Super Final ranking and prizes.

18.3 Prize Money

1. Prize money must be given at least to the top 3 pilots, and the top 3 female pilots.
2. 30% of the total prize money is given to the top 3 female pilots and 70% to the top 3 overall pilots.
3. The minimum total amount for prize money is 2000 €.
4. The distribution of prize money must be done according to Table 2.
5. In the event that there is sufficient additional prize money, at least 600 € must be awarded to the winning team.

Ranking	Overall	Women
1 st	35%	15%
2 nd	21%	9%
3 rd	14%	6%

Table 2: Distribution of Prize Money

Example: With 2600 € available, the distribution would be as shown in Table 3.

Ranking	Overall (€)	Women (€)	Teams (€)
1 st	700	300	600
2 nd	420	180	
3 rd	280	120	

Table 3: Sample Prize Money Distribution

Appendix A: Registration and Selection

A.1 How to Enter a World Cup Event

A.1.1 Registration

1. A pilot wishing to participate in a World Cup event or in the Super Final must register and apply online on the World Cup website:
<http://www.paraglidingworldcup.org>
2. The first step is to log in (using your username and password) or create a new account by clicking on "Create New Account", and following the account creation process.
3. After logging in, you must complete your personal data in order to gain a **pilot's role**. As soon as you are upgraded from ordinary user to "pilot", you will be able to declare results and sign up for events.
4. The registration deadline is exactly 3 months before each World Cup event.
5. Any pilot applying after the registration deadline will be placed in the waiting list.
6. A pilot can apply at the beginning of the season for all Paragliding World Cup events.
7. All pilots taking part in a World Cup event are automatically registered for the Super Final.
8. To ensure that World Cup events are filled, overbooking may be used.

A.1.2 Cancellation of a Registration

1. Pilots who want to cancel their registration should do it as soon as possible.
2. A pilot who cancels at least 45 days before the competition can ask for:-
 - a. His or her entry fee to be used for the next event where he or she will be selected.
 - b. A refund of the entry fee (an administrative fee of 20 € will be deducted).
3. Cancellations received less than 45 days before the competition will be refunded 50 % of the entry fee.
4. Cancellations received less than 2 weeks before the competition will not be refunded.
5. Circumstances beyond the pilot's control will be considered by the World Cup Committee when deciding on refunds.
6. It's the pilot's responsibility to claim the return of his or her entry fee. Requests for refunds for fees paid must be made before December 31st of the same year.

A.1.3 Entry Fee

1. The Entry fee for World Cup events is 200 € per event.
2. The Entry fee for the Super Final is 300 €.
3. The fee covers, but is not limited to:
 - a. Transport to all flying sites
 - b. Retrieval on main roads
 - c. A map of the area with all necessary documentation
 - d. GPS co-ordinates of turnpoints (to be loaded onto the GPS receivers)
 - e. GPS track download and task scoring
 - f. Emergency rescue and first aid medical service
 - g. Local license or fees
 - h. Possible extras (accommodation, dinners, lunch packets, parties...)

A.2 Selection Process for World Cup Events

1. In every PWCA selective competition, pilots can obtain a qualification letter (A, B, C,...) according to the competition's level (see Table 6) and their rank in that competition.
2. For every World Cup event, the World Cup Office selects pilots according to their two best competition results from the previous season, by comparing their two highest letters.
3. All selective results from the 2010 season are devalued by 2 letters, except for:-
 - a. World Cup events which are devalued by 1 level from their original level.
 - b. Championships or leagues that could not be held in 2011, due to circumstances outside the organisers' control, which are devaluated by 1 level from their original level.
4. Results from 2009 or earlier count as X.
5. Pilots are ranked according to the two best letters gained during 2011, but the best devalued letter from 2010 (or before) can replace the weakest letter from 2011.
6. Letters that are declared after the registration deadline of an event and that are not equal to 'A' cannot count for this event whatever their status is ('Accepted' by Laura or 'Auto accepted').
7. Three months before each event, pilots are ranked by their two letters in the selection list and, if not selected, in the waiting list (e.g., when pilots with DF are selected, pilots with DG are first in the waiting list).
8. Only registered pilots who were selected and who confirmed their participation by paying will be accepted, even if fewer than the nominal number of pilots fulfil this requirement.
9. When new places become available due to cancellations of selected pilots, the first pilots in the waiting list are selected.
10. Pilots are ranked by their first letter and then by their second letter when the first letters are equal.
11. In case of a tie, the precedence is given to the pilots who have not participated in Paragliding World Cups before. In case of a second tie, the precedence is given to the younger pilot.
12. The selection process can be followed on the PWCA Web site at <http://www.paraglidingworldcup.org/view/tour>

3 months before the beginning of the event	Selection deadline for all pilots
	<ol style="list-style-type: none"> 1. Confirmation of selection will be sent by Email to each pilot 3 months before each competition and the selection lists are published on the web site http://www.paraglidingworldcup.org/view/tour 2. A selected pilot must pay his Registration fee to the World Cup Office within 5 days. 3. When the selected pilot has paid his Registration fee, he is considered as a confirmed pilot. 4. The selection list on the PWCA website will show: confirmed pilots – pilots with payment in progress – waiting list – wildcard pilots
6 days later	Payment deadline
	<ol style="list-style-type: none"> 1. Pilots who have not paid their registration fee by this date are removed from the selection list. 2. The list will be filled up with the best-ranked pilots on the waiting list. Those pilots have 5 days to send their payment to the World Cup Office. 3. If necessary, this procedure is repeated as many times as necessary until the entry list is filled.

Table 4: Selection Process for World Cup events

A.2.1 Additional rules

1. Female pilots are selected using their results in overall rankings, not the female rankings.
2. The top 30 overall and the top 5 female pilots of the previous season's Super Final are always selected. They still need to register like all other pilots.
3. All World Cup Champions are always selected with "AA" qualification letters. They still need to register like all other pilots.
4. The results of the current season are not used for selection, except Paragliding World Cup events.
5. Qualification letter upgrade due to good results during the season in World Cup events will be accepted on pilots' request. If this is done less than three months before the next event, and the upgraded letters are higher than the highest letters in the waiting list, such pilots will be put at the beginning of the waiting list.
6. A competition can only be used once for selection. For example, when a competition is at the same time an Open and a national championship, a pilot can only submit the better of his two results from that competition.
7. If a pilot is not able to provide good enough competition result for selection, he cannot participate unless he is granted an organizer or PWCA wildcard.
8. Pilots with a ranking below the letter "N" get an "X".
9. Pilots registering after the registration deadline will be placed at the beginning of the waiting list if they have a qualification letter "A"; otherwise they will be placed at the end of the waiting list, but before pilots with qualification letter "X".
10. If a pilot was injured the previous year, and submits a medical certificate showing the nature of the injury to the World Cup Office, the World Cup Committee may take into account results of the season previous to the one where the injury occurred.

A.2.2 World Cup Selective Events

1. The following events are World Class events:
 - a. All World Cup events
2. The following events are World Cup Class 1 events:
 - a. National championships (national ranking)
 - b. National leagues
 - c. Open national championships (open ranking)
 - d. Other international Open competitions (CIVL), as decided by the World Cup Committee
 - e. Pre-World Cup events
3. All PWCA Class 1 events must be announced on the PWCA calendar, see <http://www.paraglidingworldcup.org/view/tour>
4. Dates, information and results must be sent **as soon as possible** to pwca@pwca.org
5. Each nation is allowed to submit two rankings (usually championship and league). This is to guarantee that all competition pilots from all active paragliding countries in the World have the possibility to have at least two qualification letters.
6. The previous season's league and championship results must be submitted by the organisers to the World Cup Office for pilot selection no later than 3 months before a World Cup event.
7. The PWCA may not accept events that are not advertised in advance on the PWCA calendar, or events for which the results are not submitted to the PWCA office in time.
8. The PWCA Committee reserves the right to devalue, replace or not use a ranking that does not allow a fair comparison between different countries (e.g., forged rankings without the top national pilots).
9. League and Championship results with less than 1800 points for the overall winner will be devalued by one level, and those with less than 1100 points will be devalued by two levels (see A.2.3 Nation Levels).
10. If a national championship could not take place, the World Cup Office will take into account the results of the previous year's championship, devalued by one level (see A.2.3 Nation Levels).
11. For open national championships, the overall open results are taken into account for all foreign pilots. The national ranking is taken into account for all pilots of the hosting nation.
12. When a national championship consists of several open competitions flown in foreign countries, and with at least 10% foreign pilots (e.g. British Opens), open results of individual events or the overall championship results - whichever are better - are taken into account for the foreign pilots. For national pilots, only the overall championship results are taken into account.
13. When an open competition includes several national championships, the level of this Open for foreign pilots is the one of the best-classed country. For National pilots, only the pilots from that country are considered, and their own country level is used instead of the Open level. Pilots will receive the best letter gained by considering their Open result or their National result; clearly the pilot may not use both the Open and National results.
Example: Nordic Open: Norway (4) + Sweden (5) + Denmark(5) + Finland(6) = Level 4 for foreign pilots.
14. In case of multiple national championships or league results from a single country (e.g. Japan) the PWCA Committee will decide the level for these results.
15. If a country does not organize a national championship, the PWCA Committee

can select a major Open event as a replacement.

A.2.3 Nation Levels

1. To be able to compare national results from all over the World, countries are ranked from level 1 to level 7.
2. Level 1 is the highest. Countries without any results are ranked level 7, and countries cannot be devalued to be worse than level 7.
3. The nation level table is calculated using the rankings of the best three pilots of each country who have scored during the previous season in any World Cup event, and the best three pilots in the last FAI World Championships.
4. When a nation does not have three pilots ranked, the table is filled with the rankings of the last-ranked pilot.
5. The nation score is computed with a factor of 2 for World Cup results and 1 for FAI results, in relation to the maximum possible rating.
6. The nation scores of nations with fewer pilots at the FAI World Championship than in the PWC events of that season are lowered by 50 points for each pilot.
Example: Three pilots count for Andorra in the PWC, but only one pilot from Andorra competed in the FAI World Championship. Therefore, Andorra's nation score is lowered by 100 points.
7. The nation rating is updated every year at the end of the season.
8. The points required for each level are given in Table 5.

Level	Points from	Points to
1	0	49
2	50	99
3	100	249
4	250	499
5	500	899
6	900	999
7	1000	

Table 5: Points required for Levels

9. The nation rating table is given in Table 6.

Competition Rules Tour 2012

	Level	PWCA	#pilots PWCA	FAI WC	#pilots FAI WC	Nation Score
Italy	1	15	3	23	3	49
Switzerland	2	26	3	19	3	65
Slovenia	2	5	3	65	3	69
Germany	2	15	3	49	3	72
USA	2	8	3	76	3	84
France	2	3	3	96	3	93
Austria	2	18	3	70	3	97
UK	3	20	3	82	3	112
Venezuela	3	31	3	99	3	147
Korea	3	38	3	125	3	184
Japan	3	9	3	199	3	199
Russia	3	31	3	183	3	224
Czech Republic	3	107	3	37	3	230
Spain	3	63	3	137	3	241
Norway	3	86	3	100	3	249
South Africa	4	44	3	219	3	281
Portugal	4	68	3	176	3	286
Brazil	4	42	3	248	3	304
Turkey	4	60	3	212	3	304
Slovak Republic	4	90	3	198	3	346
Canada	4	86	3	251	3	387
Macedonia	4	78	3	450	0	405
China	4	90	3	351	2	436
Poland	4	102	3	315	3	475
Romania	4	72	3	386	3	485
Australia	4	103	3	327	3	488
Mexico	4	177	3	185	3	494
Sweden	5	167	2	272	3	555
Argentina	5	222	3	173	3	565
Serbia	5	132	3	353	3	565
Chile	5	129	3	420	2	571
India	5	182	3	450	0	595
Taiwan	5	194	3	450	0	617
Greece	5	230	3	301	2	647
Belgium	5	217	2	274	3	648
Bulgaria	5	227	3	317	2	656
Colombia	5	207	3	306	3	659
Denmark	5	321	0	181	3	754
New Zealand	5	236	1	372	3	773
Croatia	5	272	2	309	2	781
Finland	5	321	0	214	3	784
Israel	5	240	1	450	0	802
Indonesia	5	254	2	444	1	822
Ukraine	5	287	2	450	0	838
Moldova (Republic of)	5	321	0	314	2	875
Netherlands	5	317	1	322	2	875
Malaysia	5	293	1	450	0	899
Kazakhstan	6	295	1	400	2	907
Luxembourg	6	321	0	412	1	965
Lithuania	6	321	0	434	2	985
Hungary	7	321	0	450	0	1000
Iran	7	321	0	450	0	1000

Table 6: Nation Levels

A.2.4 Qualification Letter Table

The Qualification Letter Table shows the achieved letter for each ranking based on a competition's level. It is given in Table 7.

Ranking /Level	1	2	3	4-5	6-7	8-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-90	91-100
Super Final 2011	A	A	A	A	B	B	B	C	C	C	D	E	F	G	H	I	J	K	L	M
Female SF 2011	A	B	C	D	E	F	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1	A	A	A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	X	X	X
2	A	A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	X	X	X	X
3	A	A	B	C	D	E	F	G	H	I	J	K	L	M	N	X	X	X	X	X
4	A	B	C	D	E	F	G	H	I	J	K	L	M	N	X	X	X	X	X	X
5	B	C	D	E	F	G	H	I	J	K	L	M	N	X	X	X	X	X	X	X
6	B	C	D	F	G	H	I	J	K	L	M	N	X	X	X	X	X	X	X	X
7	C	D	F	G	H	I	J	K	L	M	N	X	X	X	X	X	X	X	X	X

Table 7: Qualification Letter Table

A.3 Selection Process for the Super Final

1. The immediate selection will be published at the end of each World Cup event.
2. The waiting list will be published on 10th September 2012.
3. The selection process starts on 15th September 2012.
4. Then the selection process goes on allocating 10 days to the pilot to confirm by paying.

A.3.1 Selection

1. The 100 best pilots of the year are selected for the Super Final.
2. The 10 best female pilots, as a minimum, are selected for the Super Final.
3. Additional pilots, such as the Paragliding Legends (as defined by the PWCA Competition Rules), are also invited.
4. The selection is based on each pilot's best result in either the season's World Cup events (Immediate Selection), or in the pilot's Continental Tour.
5. Pre-World Cup winners are selected, based on the Overall results.

A.3.1.1 Immediate Selection

1. For each World Cup event, the top ranking pilots have guaranteed Super Final selection.
2. For each World Cup event, the top ranking female pilots have guaranteed Super Final selection, if they place in the top 80 of the event's overall ranking.
3. The numbers of top ranked pilots being selected per event depend on the competition's Flying Quality, and are given in Table 8.
4. An event's Flying Quality is determined by adding up the Day Quality for all tasks flown in that competition.

Flying Quality	Overall top	Female top
< 0.7	0	0
0.7 – 1.49	5	1
1.5 – 1.99	10	2
2.0 – 6.0	15	3

Table 8: Immediate Selection

A.3.1.2 Continental Cup Selection

1. For each Continental Cup, the top ranking pilots have guaranteed Super Final selection.
2. For each Continental Cup event, the top ranking female pilots have guaranteed Super Final selection, if they place in the top 80 of the event's overall ranking.

3. The numbers of top ranked pilots being selected per Continental Cup depend on the number of events counting towards that Continental Cup's results and are given in Table 9.

Number of Events	Overall top	Female top
1	10	2
2	15	2
3	20	3

Table 9: Continental Tour Selection

A.3.1.3 Waiting List

1. If the pilots selected through Immediate Selection and Continental Cup Selection do not fill the Super Final, or in case of selected pilots not being able to participate, a Waiting List is created and used to select further pilots.
2. The Super Final Waiting List is organized in pilot blocks.
3. Each block contains the next-ranked pilots for all World Cup events and all Continental Cups:
 - a. 0 pilots for events with Flying Quality below 0.7
 - b. 1 pilot for events with Flying Quality between 0.7 and 1.49
 - c. 2 pilots for events with Flying Quality between 1.5 and 1.99
 - d. 3 pilots for events with Flying Quality above 2.0
 - e. 2 pilots for Continental Cups consisting of 1 event
 - f. 3 pilots for Continental Cups consisting of 2 events
 - g. 4 pilots for Continental Cups consisting of 3 events
4. Each female block contains the next-ranked female pilots for all World Cup events and all Continental Cups:
 - a. 0 pilots for events with Flying Quality below 0.7
 - b. 1 pilot for events with Flying Quality between 0.7 and 1.49
 - c. 2 pilots for events with Flying Quality between 1.5 and 1.99
 - d. 3 pilots for events with Flying Quality above 2.0
 - e. 2 pilots for Continental Cups consisting of 1 event
 - f. 2 pilots for Continental Cups consisting of 2 events
 - g. 3 pilots for Continental Cups consisting of 3 events
5. Pilots who are already selected are not listed in a block. Their spot in that block is **not** filled with lower-ranked pilots. The size of each block may therefore vary.

Appendix B: Rescue Actions in Competitions

B.1 General

1. All pilots must pack their gliders immediately after landing: a glider lying open on the ground means "I need help!"
2. A pilot witnessing any kind of accident must inform the organizer as soon as possible on the safety frequency.
3. When reporting an accident, the following details should be given as accurately as possible:
 - a. pilot number of pilot reporting the accident
 - b. nature and location of the accident
 - c. position of the victim (if possible GPS coordinates in WGS84/UTM)
 - d. description of glider(s) involved in the accident
4. A pilot assisting an injured pilot will be granted compensation in scoring.

B.2 The Objective

1. To propose to the pilots a list of things to do when they are giving assistance to a pilot.
2. To propose to the organizer an idea for a procedure for the rescue service.
3. To encourage pilots to be responsible when an accident occurs. An overzealous response to generate extra points as compensation should be avoided.
4. This list can be used by the organizer and/or the jury in order to attribute compensation points to the pilots who gave assistance.

B.3 Organization Duties

1. To provide a radio infrastructure that covers the whole course.
2. To make clear & precise decisions with the injured pilot and/or with the pilot who is giving assistance.
3. If possible put the rescue team in touch with the accident area.
4. Transmit all information to the rescue team (general state of the injured, location, etc...)
5. Cancel the rescue action (if needed) if persons or organizations outside of the competition require it.

B.4 Rescue Procedure

If possible, an injured or rescuing pilot must:

1. To provide a radio infrastructure that covers the whole course.
2. Get in contact by phone or radio with the organization or with a pilot who is in the air.
3. Give his geographical position, his altitude, GPS co-ordinates (UTM/WGS84), color of his glider, his name, pilot number, his general condition.
4. Estimate the general help required (e.g., rescue action by helicopter or by land).
5. Stay in contact with the organization and follow their instructions.

B.5 Pilot's Obligations

Pilots should follow the principle Alert – Protect – Rescue.

B.5.1 Alert

1. Before landing, the rescuing pilots should look for some landmarks, and record

the altitude and the GPS coordinates in order to facilitate the location of the accident zone.

2. First contact with the organization should be from the air, by radio or mobile phone, since reception will most likely be better than once on the ground.

Example for an alert message: "This is pilot 911, I am a witness of an accident 5 kilometers before the third turnpoint, B07. It is a yellow glider, he threw his reserve and is now hanging in a tree. I could land close to him. What should I do?"

3. If possible, either from the air or once landed and close to the pilot, transfer the following additional information:
 - a. Name and number of the rescued pilot
 - b. General state of the rescued pilot: Can he speak, can he move?
4. Wait for the organization decision and then:
 - a. Land nearby.
 - b. Or stay in the air, close to the accident to help the rescue team to find the injured pilot.
 - c. Or go on with the task.
5. If radio contact with the organization cannot be established, the accident witness should contact other pilots nearby, and ask them to relay his information to the organization.
6. In cases where no other pilots are nearby and can be of any assistance, the witnessing pilot must judge according to the area, the impact, the presumed state of the pilot, if it is better land near him or next to a telephone.
7. Further information to give to the organization on reaching the injured pilot
 - a. Accessibility of the injured: distance to the closest road, trees, slope, cliffs, etc.
 - b. State of the injured pilot: conscious / unconscious; pulse, breathing; mobility; fractures (open?); internal / external bleeding

B.5.2 Protect

Pilots witnessing an accident should take extra precautions to stay safe themselves, by avoiding turbulent areas and being very careful in picking a suitable landing spot nearby the accident scene.

B.5.3 Rescue

1. Approaching an injured pilot should happen as calmly as possible, from the side or below if possible, to avoid falling stones.
2. Once the injured is discovered by the rescue services, the rescuer should prepare the accident zone for a helicopter landing by folding up and securely packing away all gliders and reserve parachutes.
3. Protecting an injured pilot:
 - a. Do not move him.
 - b. Cover him with a safety blanket or a paraglider.
 - c. Speak to him even if he is unconscious.
 - d. Find out if his vital functions (pulse, breathing) are efficient and do not intervene if you are not competent.

Appendix C: PWCA Scoring Formula

The following text describes the scoring formula used in PWC events. It is generally referred to as the "PWC 2012" formula.

C.1 General

The PWC 2012 scoring formula is based on GAP 2002, as used by CIVL and in most competitions run world-wide, but with some important modifications:

1. PWC 2012's Arrival Points depends on the goal configuration.
 - a. If the End of Speed Section is before the goal, then no Arrival Points are awarded. Instead, the allocation goes to time-points.
 - b. If the End of Speed Section is at the goal, then Altitude Arrival Points are awarded. These have the same allocation as traditional Arrival Points, but reward pilots who arrive high in goal.
2. The Leading Points calculation is altered so that leading out early in the task gives more Leading Points compared to GAP 2002.
3. The Launch Validity calculation is altered so that if a small number of pilots do not take off, Day Quality will still be 1.
4. The handling of stopped tasks, especially the calculation of the Day Quality in a stopped task, is done differently.

The details of these changes are given below in their respective sections.

What is kept in PWC 2012 is GAP's general idea:

1. For every event, a set of scoring parameters is defined, to reflect the expected kind of tasks to be flown during the event.
2. For every task, based on the scoring parameters and the pilots' actual performance, a Day Quality is calculated. This factor defines the maximum number of points awarded in that task.
3. Points are awarded to a pilot in three categories: Distance Points, Speed Points and Leading Points. A pilot's task score is calculated by adding up these three values.

C.2 Terminology

The following terms are used in PWCA 2012:

Take-off: Place where pilots take off for the task.

Speed Section: A timed section of the task where Speed Points are awarded. The pilots that complete the speed section fastest receive the most Speed Points.

Start of Speed Section (SSS): The cylinder/line/point where timing of the task starts.

Race Start: The time when pilots are allowed to cross SSS and begin flying the Speed Section. In a Race to Goal task, this is also the Start Time for all pilots.

End of Speed Section (ESS): The cylinder/line/point where timing of the task stops.

Goal: The finish line or cylinder defining the task's end. Can be identical to ESS, but is often chosen as a line or a smaller cylinder inside a bigger ESS cylinder for safety reasons.

Start Time: Time when a pilot starts flying the SSS.

Start Gate: A timing reference for SSS. Depending on the chosen task format, multiple Start Gates can be available, offering pilots a choice of different Race Start times.

Turnpoint (TP): A Turnpoint is a geographical point, defined by coordinates and altitude above mean sea level.

Cylinder: A Cylinder is defined by a Turnpoint at its center, and the cylinder's radius.

Task Distance: The shortest possible distance a pilot has to fly to finish the task. This means he has to fly to the boundary of each Cylinder, not the Turnpoints at the cylinders' centers.

Window Open Time: The time frame when pilots are allowed to take off.

Task Deadline: The time until which pilots' flights are being scored. All distance covered after this time will not be counted for scoring.

C.3 Scoring Parameters

Before the first task, these scoring parameters must be defined by the Meet Director, after consulting with the Technical Delegate:

1. Nominal Launch
2. Nominal Distance
3. Minimum Distance
4. Nominal Goal
5. Nominal Time

The values set for these parameters define how each task's Day Quality, its validity, is calculated. They should therefore be chosen very carefully, considering the realistic potential of the flying site. Setting the values too low will prevent the formula from distinguishing between demanding, high quality tasks and quick, easy low quality tasks (which are sometimes the only option due to weather conditions).

C.3.1 Nominal Launch

When pilots do not take off for safety reasons (difficult launch conditions, bad conditions in the air), this will reduce the Launch Validity (see section C.4.1). Nominal Launch defines a threshold of a number of pilots that do not fly that do not affect Launch Validity.

C.3.2 Nominal Distance

The shortest task distance that should be worth 1000 points. Tasks shorter than Nominal Distance will be devalued in most cases. Tasks longer than Nominal Distance will usually not be devalued, as long as the pilots fly most of the distance. Nominal Distance should be set to the expected "normal" task distance for the competition site.

C.3.3 Minimum Distance

The minimum distance awarded to every pilot who takes off. It is the distance below which it is pointless to measure a pilot's performance. This distance should be at least one tenth of Nominal Distance.

The Minimum Distance parameter is set so that pilots who are about to "bomb out" will not be tempted to fly into the next field to get past a group of pilots.

C.3.4 Nominal Goal

The percentage of pilots the Meet Director would wish to have in goal in a well-chosen task. This is typically 20 to 40%. This parameter has a very marginal effect on Distance Validity (see section C.4.2).

C.3.5 Nominal Time

Nominal Time indicates the expected task duration, the amount of time required to fly the Speed Section. If the fastest pilot's time is below Nominal Time, the task will be devalued. There is no devaluation if the fastest pilot's time is above Nominal Time. Nominal Time should be set to the expected "normal" task duration for the competition site, and Nominal Distance / Nominal Time should be a bit higher than typical average speeds for the area.

C.4 Day Quality

The Day Quality varies between 0 and 1 and measures how suitable a competition day is to evaluate pilots' skills. It is obtained by multiplying the four validity coefficients: Launch Validity, Distance Validity, Time Validity and Stop Validity.

$$\text{DayQuality} = \text{LaunchValidity} * \text{DistanceValidity} * \text{TimeValidity} * \text{StopValidity}$$

C.4.1 Launch Validity

Launch Validity depends on the percentage of pilots actually present at take-off who launched. If everybody on take-off launches, Launch Validity is 1, while if only 20% of the pilots present at takeoff launch, Launch Validity goes down to about 0.1.

The reasoning behind launch validity: Launch conditions may be dangerous, or otherwise unfavorable. If a significant number of pilots at launch think that the day is not worth the risk of launching, then the gung-ho pilots who did go will not get so many points. This is a safety mechanism.

'Pilots Present' are pilots arriving on take-off, with their gear, with the intention of flying. For scoring purposes, 'Pilots Present' are all pilots not in the 'Absent' status (ABS): Pilots who took off, plus pilots present who did not fly (DNF). DNFs need to be attributed carefully. A pilot who does not launch due to illness, for instance, is not a DNF, but an ABS.

$$\text{LVR} = \min\left(1, \frac{\text{NumberOfPilotsFlying} + \text{NominalLaunch}}{\text{NumberOfPilotsPresent}}\right)$$

$$\text{LaunchValidity} = 0.028 * \text{LVR} + 2.917 * \text{LVR}^2 - 1.944 * \text{LVR}^3$$

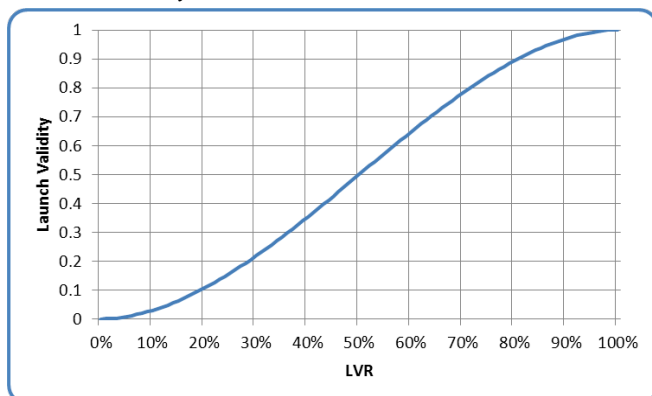


Figure C-1: Launch Validity Curve

C.4.2 Distance Validity

Distance Validity depends on Nominal Distance, the longest distance flown and the sum of flown distances of all pilots who flew further than Minimum Distance. If the task distance is quite short in relation to Nominal Distance, the day is probably not a good measure of pilot skill because there would not be many decisions to make. If a task is longer than Nominal Distance, the day will not be devalued because of Distance Validity, even if the Nominal Goal parameter value is not achieved, as long

as a fair percentage of pilots fly a good distance. This sounds like a vague statement, but the task setter should try to set tasks that are reasonable for the day and achievable. If everyone lands in goal, you must ask if this was a valid test of skill - it probably was if the fastest time and the distance flown were reasonably long. If everyone lands short of goal, was it an unsuitable task but still a good test of pilot skill? You also can have the case where a task that is shorter than Nominal Distance, has a Distance Validity of almost 1. This will happen when a large percentage of the pilots fly a large percentage of the course but, in this case, you still have a practical devaluation because there will be little spreading between pilots' scores.

$$DVR = \frac{\text{SumOfFlownDistancesOverMinDist}}{\frac{\text{NumPilotsFlying}}{2} * ((\text{NomGoal} + 1) * (\text{NomDist} - \text{MinDist})) * (\text{NomGoal} * (\text{BestDist} - \text{NomDist}))}$$

$$\text{DistanceValidity} = \min(1, DVR)$$

C.4.3 Time Validity

Time Validity depends on the fastest time to complete the Speed Section, in relation to Nominal Time. If the fastest time to complete the Speed Section is longer than Nominal Time, then Time Validity is always equal to 1.

If the fastest time is quite short, the day is probably not a good measure of pilot skill because there would not be many decisions to make and, because of this, luck can distort scores as there will be little possibility to recover any accidental loss of time. If no pilot finishes the Speed Section, then Time Validity is not based on time but on distance: The distance of the pilot who flies the furthest in relation to Nominal Distance is then used to calculate the Time Validity the same way as if it was the time.

$$\text{If one pilot reached ESS: } TVR = \min\left(1, \frac{\text{BestTime}}{\text{NominalTime}}\right)$$

$$\text{If no pilot reached ESS: } TVR = \min\left(1, \frac{\text{BestDistance}}{\text{NominalDistance}}\right)$$

$$\text{TimeValidity} = \max(0, \min(1, -0.271 + 2.912 * TVR - 2.098 * TVR^2 + 0.457 * TVR^3))$$

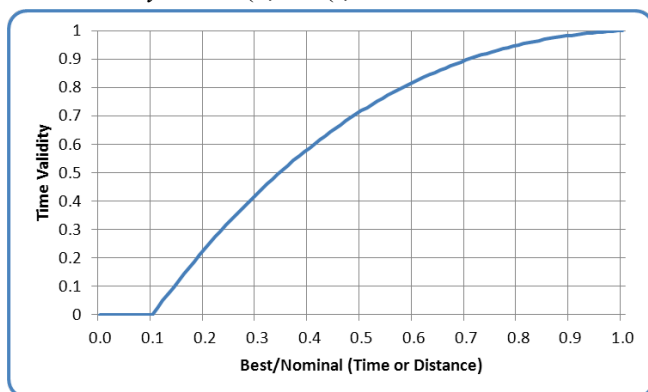


Figure C-2: Time Validity Curve

C.5 Points Allocation

The available points for each task (1000*Day Quality) are distributed between Distance points, Time points and Leading points. The distribution depends on the percentage of pilots who reached goal before the Task Deadline, compared to pilots who launched. It is expressed in terms of weight factors for each of the three point categories: Distance weight, Time weight, and Leading weight. Weight factors are always between 0 and 1. A weight factor of 0.5 for Distance, for example, means that

50% of the day's available overall points (1000* Day Quality) are available for Distance Points.

If nobody reaches goal, then a maximum of 900 points are available for Distance and 18 points for Leading but, of course, no points for Time (Speed).

$$GoalRatio = \frac{NumberOfPilotsInGoal}{NumberOfPilotsFlying}$$

$$DistanceWeight = 0.9 - 1.665 * GoalRatio + 1.713 * GoalRatio^2 - 0.587 * GoalRatio^3$$

$$LeadingWeight = \frac{1 - DistanceWeight}{8} * 1.4$$

$$ArrivalWeight = \frac{1 - DistanceWeight}{8} * 1$$

$$TimeWeight = 1 - DistanceWeight - LeadingWeight - ArrivalWeight$$

$$AvailableDistancePoints = 1000 * DistanceWeight$$

$$AvailableTimePoints = 1000 * TimeWeight$$

$$AvailableLeadingPoints = 1000 * LeadingWeight$$

$$AvailableArrivalPoints = 1000 * ArrivalWeight$$

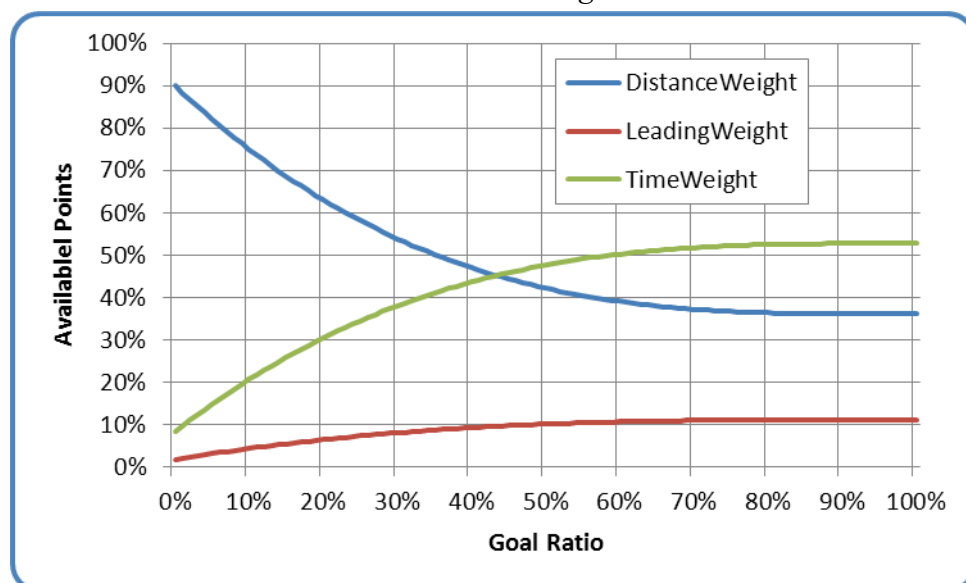


Figure C-3: Points Allocation Curves

C.6 Pilot Score

Each pilot's score is the sum of that pilot's Distance, Time and Leading points.

$$\forall p : p \in PilotsLaunched : TotalScore_p = DistancePoints_p + TimePoints_p + LeadingPoints$$

C.6.1 Distance Points

The distance considered for each pilot to calculate Distance Points is that pilot's best distance along the course line, up until the pilot landed or the Task Deadline was reached, whichever comes first. In the case of a stopped task, this distance may be increased by an Altitude Bonus (see 0 au-dessous). One half of the available Distance points are assigned to each pilot linearly, based on the pilot's distance flown in relation to the best distance flown in the task. The other half is assigned taking into consideration the difficulty of the kilometers flown.

$$LinearFraction_p = \frac{Distance_p}{2 * BestDistance}$$

$$iDist10_p = \text{int}(Distance_p * 10)$$

$$DifficultyFraction_p = DiffScore_{iDist10_p} + ((DiffScore_{iDist10_p+1} - DiffScore_{iDist10_p}) * (Distance_p - iDist10_p))$$

$$DistancePoints_p = (LinearFraction_p + DifficultyFraction_p) * AvailableDistancePoints$$

C.6.1.1 Difficulty Calculation

To measure the relative difficulty of each 100 meters of the task, we consider the number of pilots who landed in the successive few kilometers, and the distance flown.

In a first step, for each 100 meter section of the task, the number of pilots who landed in that section is counted. Pilots who landed before Minimum Distance are counted as having landed at Minimum Distance. Only pilots who landed out are considered for this calculation, pilots who reached goal are not counted.

$$\forall i : i < \text{int}(MinDist * 10) : PilotsLanded_i = 0$$

$$PilotsLanded_{\text{int}(MinDist * 10)} = \sum_{\forall Pilot : \text{int}(Pilot.Distance * 10) \leq \text{int}(MinDist * 10)} 1$$

$$\forall i : i > \text{int}(MinDist * 10) \& i \leq \text{int}(MaxDist * 10) : PilotsLanded_i = \sum_{\forall q : q \in PilotsLandedOut : \text{int}(Distance_q * 10) = i} 1$$

Then the Difficulty for each 100 meter section of the task is calculated by counting the number of pilots who landed further along the task. If 100 pilots land out on a flight of 100 km, the next 3 km are considered. If 10 pilots land out in 100 km, the next 30 km are considered. The variable LookAheadDist contains the number of 100 meter slots to look ahead for this.

$$LookAheadDist = \max(30, \text{round}(\frac{30 * BestDistanceFlown}{NumberOfPilotsLandedOut}, 0))$$

$$\forall i : i \leq \text{int}(MaxDist * 10) : Difficulty_i = \sum_{j=\min(i+LookAheadDist, \text{int}(BestDistanceFlown * 10))}^{i} PilotsLanded_j$$

$$SumOfDifficulty = \sum_i Difficulty_i$$

Relative Difficulty is then calculated by dividing each 100 meter slot's Difficulty by twice the sum of all Difficulty values.

$$\forall i : i \leq \text{int}(MaxDist * 10) : RelativeDifficulty_i = \frac{Difficulty_i}{2 * SumOfDifficulty}$$

Finally, we can calculate the Difficulty Score Percentage for each 100 meter slot.

$$\forall i : i \leq \text{int}(MinDist * 10) : DiffScore_i = \sum_{j=0}^{\text{int}(MinDist * 10)} RelativeDifficulty_j$$

$$\forall i : i > \text{int}(MinDist * 10) \& i < \text{int}(BestDistanceFlown * 10) : DiffScore_i = \sum_{j=0}^{i-1} RelativeDifficulty_j$$

$$\forall i : i \geq \text{int}(BestDistanceFlown * 10) : DiffScore_i = 0.5$$

C.6.1.2 Example

For an example, see Figure C-4: Note how the slope of the green curve (the total Distance points) becomes steeper before an area where many pilots landed and flatter just after. The red circles show these areas before the big group at the 41 km mark, and after the 46 km mark. There are two reasons for this:

1. For safety and retrieval reasons, we do not want to encourage pilots to fly only a short distance past a group of landed pilots.
2. If a pilot lands somewhere, he or she probably got into trouble just before, and then glided a while before landing.

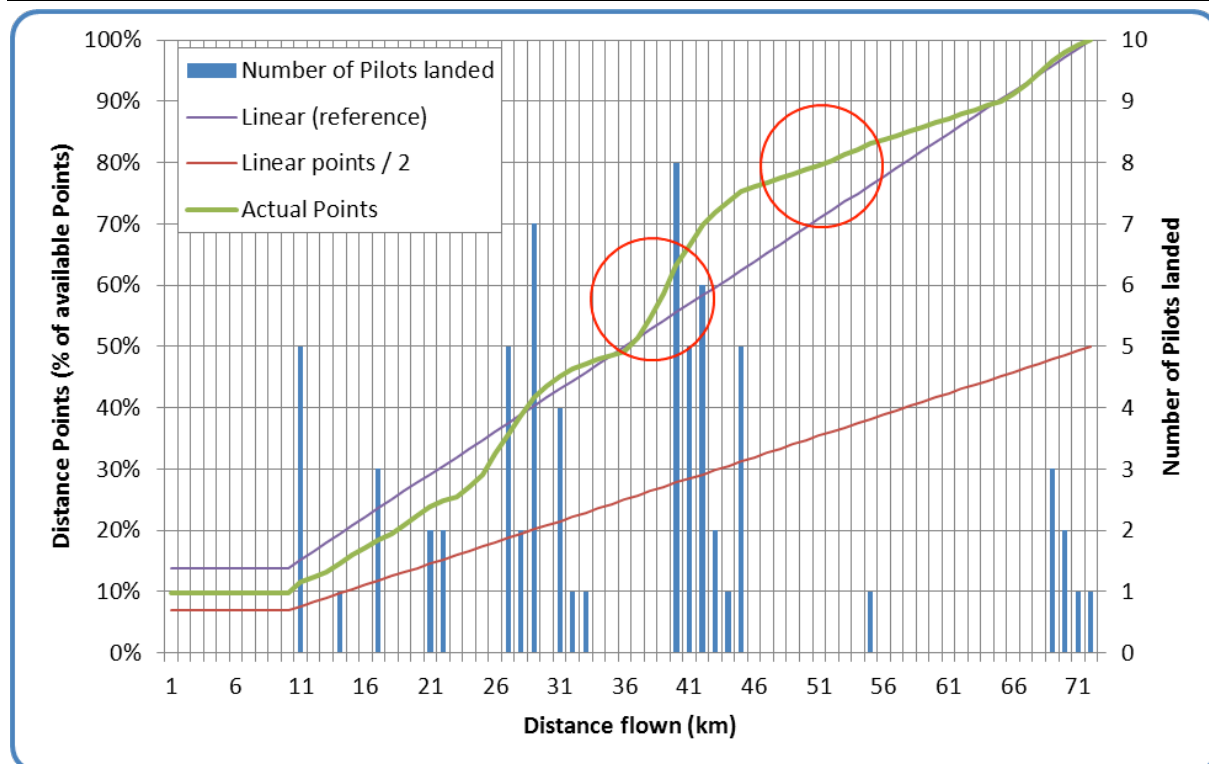


Figure C-4: Sample Distance Points

C.6.2 Time Points

The Time Points can be looked at as Speed Points. Time Points are assigned to the pilot as a function of Best Time and Pilot Time – the time the pilot took to complete the Speed Section. Slow pilots will get zero points for speed if their time to complete the Speed Section is equal to or longer than Fastest Time plus the square root of Fastest Time. All times are measured in hours.

$$SpeedFraction_p = \max(0, 1 - \sqrt[3]{\frac{(Time_p - BestTime)^2}{\sqrt{BestTime}}})$$

$$TimePoints_p = SpeedFraction_p * AvailableTimePoints$$

C.6.2.1 Examples

For three examples of Time Point distributions for tasks with different best times, see Figure C-5 and Table 10.

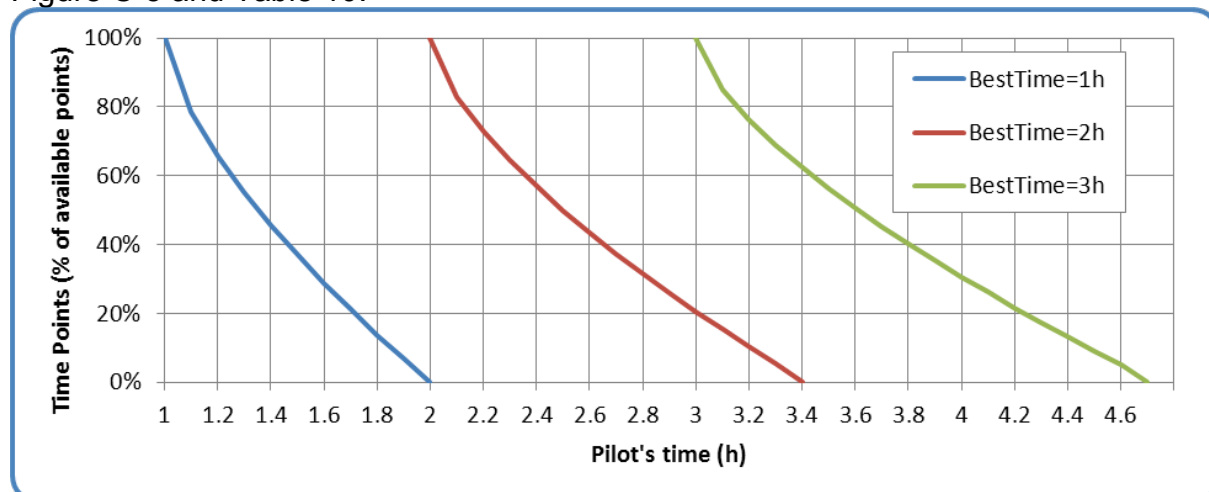


Figure C-5: Sample Time Point

Fastest Time	80% Time Points time	50% Time Points time	0 Time Points time
1:00	1:05	1:21	2:00
2:00	2:08	2:30	3:24 (3.4 hours)
3:00	3:09	3:37	4.42 (4.7 hours)

Table 10: Sample Time Point Distribution (all times in hours:minutes)

C.6.3 Leading Points

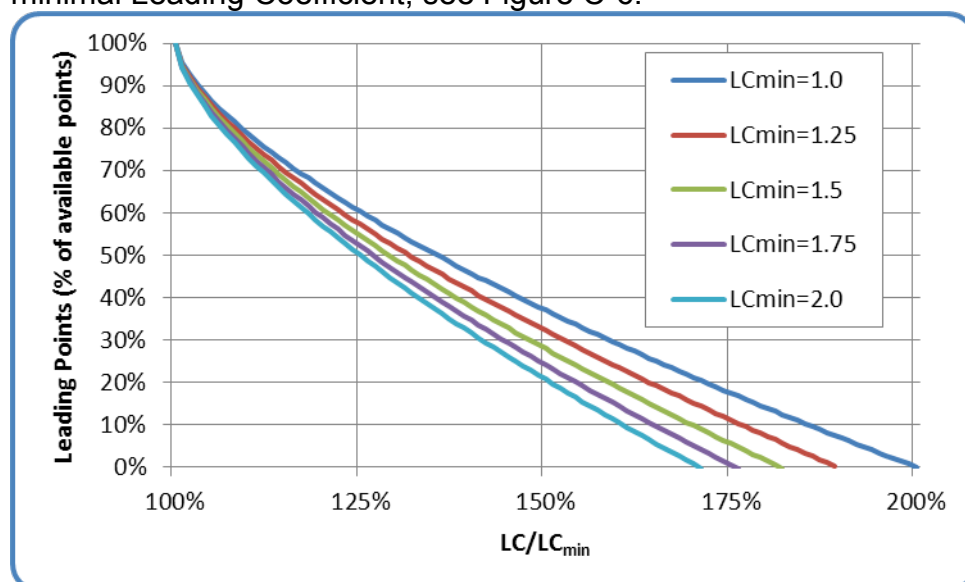
Leading Points are awarded to encourage pilots to start early and to rewards the risk involved in flying in the leading group. Pilots will get Leading Points even if they landed before goal or the End of Speed Section.

$$LC_{\min} = \min(\forall p : p \in \text{PilotsFlown} : LC_p)$$

$$\text{LeadingFactor}_p = \max(0, 1 - \sqrt[3]{\frac{(LC_p - LC_{\min})}{\sqrt{LC_{\min}}}}^2$$

$$\text{LeadingPoints}_p = \text{LeadingFactor}_p * \text{AvailableLeadingPoints}$$

To get an impression of the way Leading Points are awarded depending on a task's minimal Leading Coefficient, see Figure C-6.


Figure C-6: Leading Points for various $LC_{\min}$

C.6.3.1 Leading Coefficient (LC)

Each started pilot's track log is used to calculate the Leading Coefficient (LC), by calculating the area underneath a graph defined by each track point's time, and the distance to ESS at that time. The times used for this calculation are given in seconds from the moment when the first pilot crossed SSS, to the time when the last pilot reached ESS. For pilots who land out after the last pilot reached ESS, the calculation keeps going until they land. The distances used for the LC calculation are given in Kilometers and are the distance from each point's position to ESS, starting from SSS, but never more than any previously reached distance. This means that the graph never "goes back": even if the pilot flies away from goal for a while, the corresponding points in the graph will use the previously reached best distance towards ESS. Important: While GAP uses distances to ESS, PWC 2010 uses distances to ESS squared. This is to increase the number of Leading Points awarded for leading out early in the task.

$$LC_p = \frac{\sum_{i: tp_i \in \text{TrackPointsInSS}_p} \text{taskTime}(tp_i) * (\text{bestDistToESS}(tp_{i-1})^2 - \text{bestDistToESS}(tp_i)^2)}{1800 * \text{LengthOfSpeedSection}^2}$$

$\forall p : p \in \text{PilotsLandedOut} \wedge \text{taskTime}(tp_{\max}) < \text{ESSTime}_{\text{LastPilotAtESS}} :$

$$LC_p = LC_p + \text{LastTime}_{\text{LastPilotAtESS}} * \text{bestDistToESS}(tp_{\max})^2$$

$\forall p : p \in \text{PilotsLandedOut} \wedge \text{taskTime}(tp_{\max}) \geq \text{ESSTime}_{\text{LastPilotAtESS}} :$

$$LC_p = LC_p + \text{taskTime}(tp_{\max}) * \text{bestDistToESS}(tp_{\max})^2$$

$\text{taskTime}(tp) = \min(\text{TaskDeadline}, \text{time}(tp))$

$\text{bestDistToESS}(tp_0) = \text{LengthOfSpeedSection}$

$\forall i : i > 0 \wedge tp_i \in \text{TrackPointsInSS}_p :$

$\text{bestDistToESS}(tp_i) = \min(\text{bestDistToESS}(tp_{i-1}), \text{LengthOfSpeedSection} - \text{distanceFlown}(tp_i))$

C.6.3.2 Example

The following example is taken from CIVL's "The GAP Scoring formula explained"¹. In PWC 2010, the "Speedsection distance" would be given as km²:

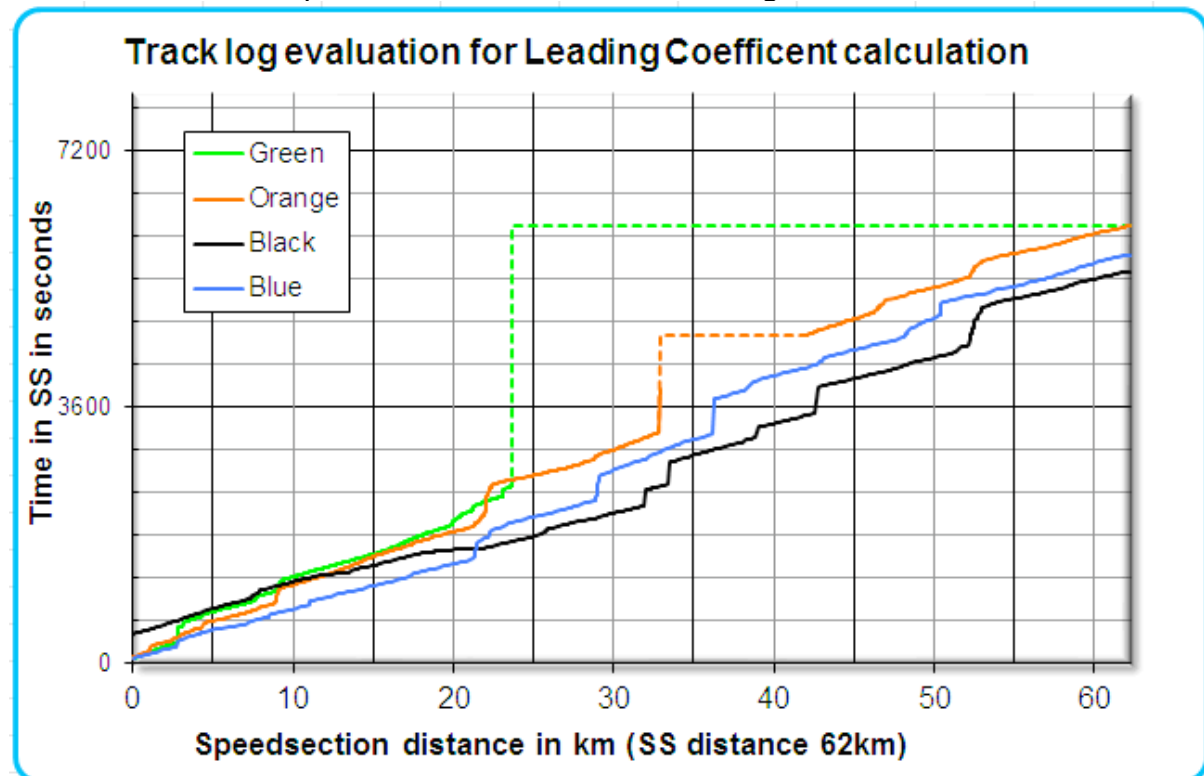


Figure C-7: Sample Track Log Graphs

Blue was the first to enter the Speed Section, but Black was the first pilot to cross the End of Speed Section. Green started at the same time as Blue, but landed short, after about 23km and just over 40 minutes of flight inside the Speed Section. Black was fastest, therefore will get the most Time points, but he started late, probably had pilots out front to show the way during the first 22km, but was leading after that.

If a pilot lands along the course (Green), or if his track log is interrupted (Orange), his track log is completed as shown by the dotted lines: Missing parts are calculated as if the dotted line was the actual track log, so LC becomes bigger, lowering the Leading

¹ CIVL: "The GAP Scoring formula explained, For GAP version 2008", "GapGuide-2011-v1.pdf"

Points for that pilot, compared to a track where that part is not missing. A pilot landing just short of goal will be less penalized and could even get full Leading Points if he led for a long while.

The pilot who used best the earliest part of the day (i.e. Black, who has the smallest area below the track log graph) gets all the available Leading points, while the others gets their points according to the same formula used for the Time points for the same reasons. If the task in the example is fully valid, and 30% of pilots reached goal, then Black will get all of the available 81 Leading points and full Time points, as he was fastest; Blue gets 45 points because he started early but was slower; Orange receives only 18 Leading points as he was slow and had a gap in his track log; Green gets 0 points even though he started early, because he was the slowest and landed fairly short.

C.6.4 Altitude Arrival Points

Altitude Arrival Points are a replacement for the old position or time-based arrival points. They are only awarded when ESS and goal are in the same place.

Altitude Arrival Points are awarded according to the pilot's GPS altitude above the goal (see Figure C-8).

Altitude Arrival Points are computed as follows:

$Curve = 6$

$Altitude_{max} = 1500$

$f(a, k) = 1 - 1 / e^{a/k}$

$k1 = C \sqrt{Altitude_{max}}$

$k2 = \frac{AvailableArrivalPoints}{f(Altitude_{max}, k1)}$

$ArrivalPoints_p = k2 * f(Altitude_p, k1)$

This formula is optimized so that the most efficient height to arrive above the goal field is 300-400m. If a pilot can make goal on a maximum speed glide, then he will do better gliding at around half bar.

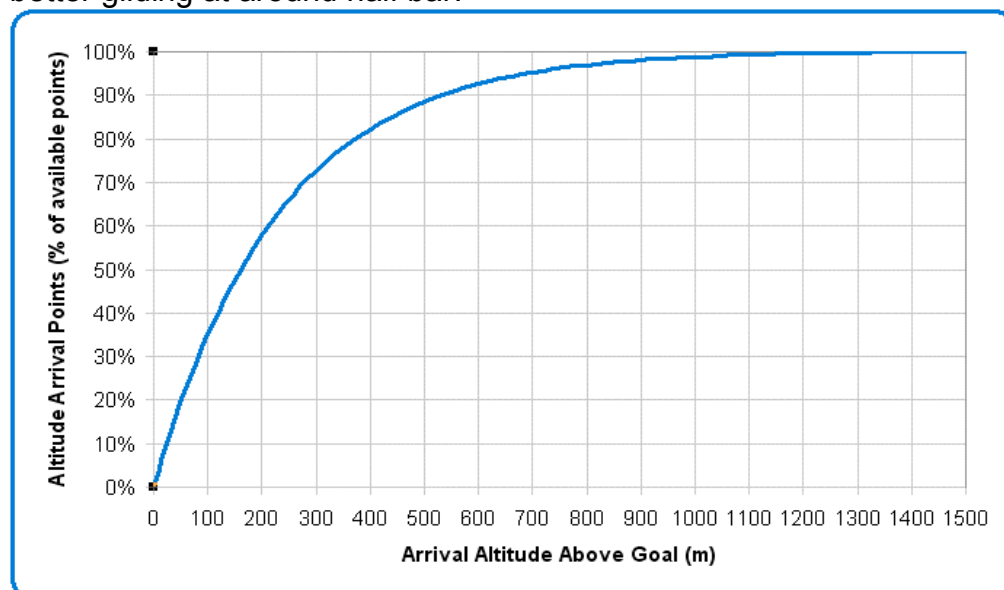


Figure C-8: Altitude Arrival Points

C.7 Stopped Tasks

The Task Stop Time is 5 minutes before the task stop announcement.

A stopped task will be scored if the flying time was one hour or more. For Race to Goal tasks, this means that the Task Stop Time must be one hour or more after the Race Start Time. For all other tasks, in order for them to be scored, the Task Stop Time must be one hour or more after the last pilot started.

Pilots who were at a position between End of Speed Section and Goal at the Task Stop Time will be scored for their complete flight, including the portion flown after the Task Stop Time.

A fixed amount of points is subtracted from the time points of each pilot that makes goal in a stopped task. This amount is the amount of time points a pilot would receive if he had reached ESS exactly at the Task Stop Time.

C.7.1 Stopped Task Validity

For stopped tasks, an additional validity value, the Stopped Task Validity, is calculated and applied to the Task Validity.

$$DayQuality_{stopped} = LaunchValidity * DistanceValidity * TimeValidity * StoppedTaskValidity$$

Stopped Task Validity is calculated taking into account the task distance, the flown distances of all pilots, the number of launched pilots and the number of pilots still flying at the time when the task was stopped.

$$\forall tasks: NumberOfPilotsReachedESS > 0 : StoppedTaskValidity = 1$$

$$\forall task : NumberOfPilotsReachedESS = 0 :$$

$$StoppedTaskValidity = \min(1, \sqrt{\frac{BestDistFlown - \text{avg}(\forall i : DistFlown_i)}{DistLaunchToESS - BestDistFlown + 1}} * \sqrt{\frac{\text{stdev}(\forall i : DistFlown_i)}{5}} + (\frac{NumPilotsLandedBeforeStopTime}{NumPilotsLaunched})^3)$$

C.7.2 Altitude Bonus

To compensate for altitude differences at the time when a task is stopped, a bonus distance is calculated, based on each pilot's altitude above goal, and added to the pilot's actual distance. All altitude values are GPS altitude values. For all Distance Point calculations, including the Difficulty calculations, these new Stopped Distance values are being used instead of the Best Distance values. Time and Leading Points calculations remain the same: they do not consider the Altitude Bonus or Stopped Distance values. This also means that pilots flying just before goal at Task Stop Time, and whose Stopped Distance would take them into goal, will still not receive any Time Points.

$$GlideRatio = 2.0$$

$$StoppedDistanceRaw_p = \max(BestDistance_p, DistanceAtStopTime_p + (AltitudeAtStopTime_p - GoalAltitude$$

$$StoppedDistance_p = \min(TaskDistance, StoppedDistanceRaw_p)$$

C.7.3 Time Window

Stopped Clock Start or Elapsed Time Races must be treated slightly differently from stopped Race to Goal tasks: Only the time window available to the last pilot started is considered for scoring. This means that if the last pilot started then flew for, for example, 75 minutes until the task was stopped, all tracks are only scored for the first 75 minutes each pilot flew after taking the start.

Appendix D: Fixed Total Validity (FTV)

D.1 General

Fixed Total Validity is a procedure to score pilots on their best tasks, rather than all their tasks. Fixed Total Validity means the sum (total) of available points (validity) is set (fixed) to the same value for each competitor.

To calculate a pilot's FTV score, for all his or her flights:

1. Calculate a performance percentage for each day by dividing the pilot's day score by the day validity (day quality factor calculated by the scoring formula).
2. Arrange all flights in descending order of performance percentage.
3. Total up the flights' raw day scores (not performance percentages) in order of performance percentage until the sum of validities for those scores reaches the pre-decided Fixed Total Validity value.
4. If the last score added takes that pilot's total validity above the Fixed Total Validity, then only a fraction of that score is used so that the pilot's total validity is equal to the Fixed Total Validity.

D.2 Example

For an example how this works, let's look at a competition with five pilots, where five tasks were flown. The validity of those tasks, the Day Quality as calculated by the scoring software, is given in Table 11.

Task	Day Quality
1	0.98
2	1.0
3	0.75
4	0.42
5	1.0

Table 11: Day Qualities

Additionally, the competition organizers decided up front to use FTV, with a factor of 2/3, meaning that each pilot's best 2/3 results will count towards the final ranking.

The sum of all the validities in Table 11 is 4.15, 2/3 of that would be 2.77.

The results achieved in the five tasks are given in Table 12.

Pilot	Task 1	Task 2	Task 3	Task 4	Task 5
Pilot 1	300	305	750	250	1000
Pilot 2	900	600	200	100	400
Pilot 3	500	500	500	400	500
Pilot 4	800	1000	300	350	700
Pilot 5	950	800	600	200	800

Table 12: Task Results

Note that in tasks 1 and 4, the task winner received fewer points than the day's theoretical maximum ($1000 \times \text{Day Quality}$), since it can happen that the pilot who gains the most Leading Points is not the one winning the task.

The Performance Percentage is given in Table 13. This is calculated by dividing each pilot's task score by the corresponding Day Quality. So for instance, the Performance Percentage for Pilot 1 in Task 1 would be $300 / 0.98 = 306.12$. This Performance Percentage indicates how well each pilot did in a task, in relation to the task's validity.

Pilot	Task 1	Task 2	Task 3	Task 4	Task 5
Pilot 1	306.12	305.00	1000.00	595.24	1000.00
Pilot 2	918.37	600.00	266.67	238.10	400.00
Pilot 3	510.20	500.00	666.67	952.38	500.00
Pilot 4	816.33	1000.00	400.00	833.33	700.00
Pilot 5	969.39	800.00	800.00	476.19	800.00

Table 13: Performance Percentages

Now, for each pilot, the task results are sorted by the Performance Percentages, in descending order:

Pilot 1	Day Quality	Performance Percentage	Task Score
Task 5	1.0	1000.00	1000
Task 3	0.75	1000.00	750
Task 4	0.42	595.24	250
Task 1	0.98	306.12	300
Task 2	1.0	305.00	305

Table 14: Sorted Results Pilot 1

Pilot 2	Day Quality	Performance Percentage	Task Score
Task 1	0.98	918.37	900
Task 2	1.0	600.00	600
Task 5	1.0	400.00	400
Task 3	0.75	266.67	200
Task 4	0.42	238.10	100

Table 15: Sorted Results Pilot 2

Pilot 3	Day Quality	Performance Percentage	Task Score
Task 4	0.42	952.38	400
Task 3	0.75	666.67	500
Task 1	0.98	510.20	500
Task 2	1.0	500.00	500
Task 5	1.0	500.00	500

Table 16: Sorted Results Pilot 3

Pilot 4	Day Quality	Performance Percentage	Task Score
Task 2	1.0	1000.00	1000
Task 4	0.42	833.33	350
Task 1	0.98	816.33	800
Task 5	1.0	700.00	700
Task 3	0.75	400.00	300

Table 17: Sorted Results Pilot 4

Pilot 5	Day Quality	Performance Percentage	Task Score
Task 1	0.98	969.39	950
Task 2	1.0	800.00	800
Task 5	1.0	800.00	800
Task 3	0.75	800.00	600
Task 4	0.42	476.19	200

Table 18: Sorted Results Pilot 5

Then we add up each pilot's scores, in the order calculated for each pilot, until the corresponding Day Qualities reach the calculated Total Validity of 2.77.

Pilot 1	Day Quality	Total Validity Left	Task Score	Sum
		2.77		
Line 1, Task 5	1.0	1.77	1000	1000
Line 2, Task 3	0.75	1.02	750	1750
Line 3, Task 4	0.42	0.60	250	2000
Line 4, Task 1	0.98	0.0	$300 \times (0.60/0.98) = 184$	2184

Table 19: FTV Calculation Pilot 1

Notice that in Table 19, task 1 only counts partially towards the overall result, since its Day Quality (0.98) is bigger than the remaining Total Validity (0.6). Task 2 is completely disregarded, since it was the one where pilot 1 performed the worst in relation to the day's validity.

Pilot 2	Day Quality	Total Validity Left	Task Score	Sum
		2.77		
Line 1, Task 1	0.98	1.79	900	900
Line 2, Task 2	1.0	0.79	600	1500
Line 3, Task 5	1.0	0.0	$400 \times (0.79/1.0) = 316$	1816

Table 20: FTV Calculation Pilot 2

For pilot 2, only three tasks count towards the final result, since after those, all the Total Validity is used up (Table 20).

Pilot 3	Day Quality	Total Validity Left	Task Score	Sum
		2.77		
Line 1, Task 4	0.42	2.35	400	400
Line 2, Task 3	0.75	1.60	500	900
Line 3, Task 1	0.98	0.62	500	1400
Line 4, Task 2	1.0	0.0	$500 \times (0.62/1.0) = 310$	1710

Table 21: FTV Calculation Pilot 3

Pilot 4	Day Quality	Total Validity Left	Task Score	Sum
		2.77		
Line 1, Task 2	1.0	1.77	1000	1000
Line 2, Task 4	0.42	1.35	350	1350
Line 3, Task 1	0.98	0.37	800	2150
Line 4, Task 5	1.0	0.0	$700 \times (0.37/1.0) = 259$	2409

Table 22: FTV Calculation Pilot 4

Pilot 5	Day Quality	Total Validity Left	Task Score	Sum
		2.77		
Line 1, Task 1	0.98	1.79	950	950
Line 2, Task 2	1.0	0.79	800	1750
Line 3, Task 5	1.0	0.0	$800 \times (0.79/1.0) = 632$	2382

Table 23: FTV Calculation Pilot 5

This all then results in the competition ranking given in Table 24.

Rank	Pilot	Task 1	Task 2	Task 3	Task 4	Task 5	Total
1	Pilot 4	800	1000	300	350	(259 700)	2409
2	Pilot 5	950	800	600	200	(632 800)	2382
3	Pilot 1	300	305	750	(184 250)	1000	2184
4	Pilot 2	900	600	200	400	(316 400)	1816
5	Pilot 3	500	(310 500)	500	400	500	1710

Table 24: FTV Competition Ranking

Appendix E: GPS Receivers

E.1 Accepted GPS Receivers

The following GPS receiver models are accepted in World Cup events as task evidence.

- Aircotec: Top Navigator, XC Trainer (all variations)
- Bräuniger: Competino, Compeo, IQ-Basic-GPS, Competino+, Compeo+
- Compass Italy: C-Pilot Pro
- DigiFly: Leonardo (all variations)
- Flymaster: F1, B1-NAV, GPS, NAV, LIVE
- Flytec: 5020, 5030, 6015, 6020, 6030
- Garmin: All models which record GPS altitude. Excluded are the models listed in E.2 au-dessous.
- MLR: SP24XC "Free Flight"

E.2 Not Accepted GPS Receivers

The following GPS receiver models are not or no longer accepted in World Cup events as task evidence – mostly due to lack of GPS altitude recording capability. These devices may still be used for navigation.

- Older Garmin models (like the 12 series 48, 90, 90xl, II+, III)
- Garmin 38, 40, 45, II, eTrex "basic" models and eMap.
- All Garmin Oregon and later models (no serial waypoint protocol).
- All other GPS receivers not listed in E.1 au-dessus.