

# 15

## USPA National **Speed Skydiving** Championships Competition Rules



# Table of Contents

<b>1. Introduction</b>	<b>1</b>
1.1. Purpose of the Competition	1
<b>2. Definitions</b>	<b>1</b>
2.1. Speed Measuring Device (SMD)	1
2.2. Spherical error probable (SEP)	1
2.3. Geometric Altitude	1
2.4. Safety Panel	1
2.5. DZ Elevation	1
2.6. Breakoff Altitude	1
2.7. Performance Window	1
2.8. Validation Window	1
2.9. Technical Scoring Director (TSD)	1
2.10. Above Ground Level (AGL)	1
<b>3. Equipment</b>	<b>1</b>
3.1. Speed Measuring Device (SMD)	1
3.2. Equipment	2
<b>4. Event Description</b>	<b>3</b>
4.1. Objective	3
4.2. Program of Events	3
4.3. Performance Requirements	3
<b>5. Rules Specific To The Event</b>	<b>3</b>
5.1. Order of Jumping	3
5.2. Jumping Procedure	3
5.3. Exit Order	3
5.4. Exit Altitude	3
5.5. Scoring Speed Skydiving	4
<b>6. Judging &amp; Scoring</b>	<b>4</b>
6.1. Scoring the Jump	4
6.2. Collation of the Score Sheets	4
6.3. Determining Placing	4
6.4. Other Responsibilities	4
<b>7. Classification Of Final Results</b>	<b>4</b>
7.1. Determination of the Winners	4
<b>Addendum A – Exit Procedure</b>	<b>5</b>

## 1. Introduction

### 1.1. Purpose of the Competition

- To determine the Champions of Speed Skydiving.
- To promote and develop Speed Skydiving training and competition.
- To allow participants exchange experience, knowledge, and information.
- To improve judging methods and practices.

## 2. Definitions

### 2.1. Speed Measuring Device (SMD)

- 2.1.1 A device used to record the real-time, three-dimensional (3D) position of the competitor, which is mounted on the competitor's body or equipment.

### 2.2. Spherical error probable (SEP)

- 2.2.1 The horizontal and vertical accuracy specifications of a SMD expressed in terms of a sphere of given radius; for example, "real-time accuracy <10 meters SEP."

### 2.3. Geometric Altitude

- 2.3.1 The height, as measured by a Global Navigation Satellite System, optical methods or radar, above ground level.

### 2.4. Safety Panel

- 2.4.1 For safety violations referenced in these rules, the Safety Panel shall consist of the USPA Controller, Meet Director, and Chief Judge. Decisions of the Safety Panel are final and not subject to protest.

### 2.5. DZ Elevation

- 2.5.1 The ground level for the competition site will be determined by the Meet Director and will be made known at the pre-event competitors' meeting.

### 2.6. Breakoff Altitude

- 2.6.1 Breakoff altitude is set at 5,600 ft. (1,707 meters) AGL. No speed measurements are taken into account below the breakoff altitude.

### 2.7. Performance Window

- 2.7.1 The performance window is the scoring part of the speed jump, which starts at exit. The end of the performance window is either 7,400 ft. (2,256 meters) below exit or at Breakoff altitude whichever is reached first.

### 2.8. Validation Window

- 2.8.1 The validation window is the part of the jump which is used to determine the accuracy of the SMD data. The validation window is 3,300 ft (1,006 meters) in length, the end of which is determined by the end of the performance window.

### 2.9. Technical Scoring Director (TSD)

- 2.9.1 Appointed by the Meet Director and Chief Judge and approved by the organizer for that position. The Technical Scoring Director is responsible for the planning, setup, and maintenance of the downloading and analysing software before and during the competition.

### 2.10. Above Ground Level (AGL)

- 2.10.1 The height, above ground level, as measured by the approved SMD using a Global Navigation Satellite System (GNSS), optical methods or radar.

## 3. Equipment

### 3.1. Speed Measuring Device (SMD)

- 3.1.1 The SMD must record real-time three-dimensional (3D) data with a resolution of at least 5Hz and a position accuracy (SEP) of less than 10 meters.
- 3.1.2 The SMD must be capable of gathering data or transmitting real-time data to a ground station or stations, which allows the competitor's vertical freefall speed between 4115m and 1700m above ground to be displayed to a resolution of one hundredth of a kilometer per hour, and the competitors exit altitude to be determined to an accuracy of 10m. The SMD must also be capable of recording the exit altitude.
- 3.1.3 The data from an SMD may or may not be required to be downloaded to a computer in order to determine the competitors speed.

## Chapter 15: USPA National Speed Skydiving Championships Competition Rules

- 3.1.4 The device must not require any action by the competitor in order for it to function, and it must activate its recording function automatically upon exit of the competitor.
- 3.1.5 If settings on the device can be altered after the device has been attached to the competitor, it must be evident to the judges that this has occurred, any alteration must be easily reversed and must not affect the device's data gathering or previous data gathered. Alternatively, it must be impossible for the competitor to alter the device settings once the device is attached.
- 3.1.6 If the device measures altitude from pressure readings, then the altitude is not to be compensated for ambient temperature, and temperature according to International Standard Atmosphere is to be used.
- 3.1.7 If the analysis software can compensate for ambient temperature, that facility is not to be used, and temperature according to International Standard Atmosphere is to be used.
- 3.1.8 If the SMD transmits its data to the ground station during the jump, then that data must be recorded and saved when it is received.
- 3.1.9 If the data from the SMD is downloaded for analysis to a computer after landing, then that data must be recorded and saved when it is downloaded.
- 3.1.10 If the speed result is to be read directly from the SMD after landing, then the result needs to be retained on the SMD for the duration of the competition and recorded on the score sheets.

### 3.2. Equipment

- 3.2.1 Competitors shall not use propulsion systems. If any propulsion system is used, the score will be zero for that jump.
- 3.2.2 Parachutes and equipment will be inspected by the Chief Judge or Meet Director to confirm that they conform to normal weights for that equipment. Chief Judge and Meet Director may delegate this task to a qualified person, such as a Rigger, Senior Rigger or Master Rigger. If, in the opinion of the Chief Judge and Meet Director, the equipment does not conform to normal weights for that equipment, the competitor may be required to demonstrate that the equipment does not contain extra weight. This decision is not grounds for protest.
  - 3.2.2.1 The use of parachute equipment (e.g., a tandem rig or student equipment) to add weight as described in 3.2.2 is not permitted, as determined by the Chief Judge or Meet Director. This decision shall not be grounds for protest.
- 3.2.3 Parachutes and equipment will be inspected by the Chief Judge, Meet Director or USPA Controller to confirm that they are safe for the event. Chief Judge, Meet Director or USPA Controller may delegate this task to a qualified person, such as a Rigger, Senior Rigger or Master Rigger. If, in the opinion of the Chief Judge, Meet Director and USPA Controller, the parachute and/or equipment are not safe for the event, the competitor will not be permitted to use it. Inspections that do not interfere with a competitor's performance may be made at any time during the competition, as determined by the Chief Judge. If any equipment does not meet the requirements as determined by the Chief Judge, Meet Director or USPA Controller, this equipment will be deemed to be unusable for the competition. This decision is not grounds for protest.
- 3.2.4 Competitors shall not carry additional or removable weight on their body or equipment. They must be weighed by the Chief Judge, or a person appointed by the Chief Judge for the purpose, at the start of the competition wearing all their normal jump equipment to establish a baseline weight. The Chief Judge, or a person appointed by the Chief Judge for the purpose, must conduct subsequent random weight checks, which may fluctuate from the baseline weight by no more than +/- 2kg before requiring an inspection. If the addition or removal of weight is detected, the score for that jump will be zero. This decision shall not be grounds for protest.
- 3.2.5 If a competitor changes his equipment during competition, the new equipment must be inspected by the Chief Judge, Meet Director or USPA Controller, or a person appointed by the appropriate official for the purpose, according to 3.2.2, 3.2.3, and 3.2.3 before the competitor is allowed to jump with the new equipment.
- 3.2.6 Prior to the start of the competition each competitor shall wear one SMD provided by the Host and issued by a Judge. The SMD will be attached on the competitor's helmet with the antenna having a clear view of the sky, located and positioned to the satisfaction of the Chief Judge. This decision shall not be grounds for a protest.
  - 3.2.6.1 If at any time after the start of the competition the Chief Judge finds the mounting position of the SMD unsatisfactory (for example, if the GPS signal is compromised) the chief judge may require the SMD to be remounted or for the competitor to wear a secondary SMD mounted on their helmet, body or equipment to the satisfaction of the Chief Judge.
  - 3.2.6.2 It should not be possible for a competitor to alter settings or data on the device SMD without this being evident to the judges. Tampering with the device will result in a score of zero for the jump. This decision is not grounds for protest.
- 3.2.7 A competitor shall not wear any other electronic device or wires closer than 2.54cm from the official SMD as measured by the judging staff. However, a second identical SMD unit may be worn without regard to this separation requirement. If any such electronic device affects the SMD system, and the source of the interference is not obvious and beyond the reasonable control of the jumper, a rejump may be granted by the Chief Judge.
- 3.2.8 Each competitor must wear a functioning audio altitude warning device on every jump. Failure to do so will result in a score of zero for that jump. Two suitable audible altitude warning devices, with visual indications in the goggles/visor, are recommended.

## Chapter 15: USPA National Speed Skydiving Championships Competition Rules

- 3.2.9 The SMD will be attached in its location by a Judge.
- 3.2.10 The SMD will be turned on by a Judge, or by the competitor, if instructed to do so by any Judge. The judge will verify that the SMD is on and receiving satellite signal.
- 3.2.11 The SMD will be turned off by a Judge or by the competitor if instructed to do so by any Judge.
- 3.2.12 Immediately after landing, the competitor shall return the SMD used on that jump to a Judge.
- 3.2.13 If the SMD is found to have been tampered with, and if in the opinion of the Panel of Judges, this was not caused by circumstances beyond the control of the competitor, then no rejump will be awarded, and the competitor will receive a score of zero for that jump. This decision shall not be grounds for a protest.
- 3.2.14 If the SMD malfunctions and, in the opinion of the Panel of Judges, the malfunction was not caused by an action or interference by the competitor, then the competitor will be given the option of making a re-jump or receiving a score of zero for that jump.

## 4. Event Description

### 4.1. Objective

- 4.1.1 The objective of the event is for competitors to achieve the highest average vertical speed over three seconds in freefall within the performance window.

### 4.2. Program of Events

- 4.2.1 The event consists of 8 rounds.
- 4.2.2 The minimum number of rounds for a valid event is one.

### 4.3. Performance Requirements

- 4.3.1 The score sheet must also have a column showing the average speed of completed rounds, rounded to the nearest hundredth of a km/h.

## 5. Rules Specific To The Event

### 5.1. Order of Jumping

- 5.1.1 The starting order of the first round shall be in reverse order of the standings at the most recent USPA Nationals. Competitors that did not participate in the most recent USPA Nationals will jump at the beginning of the task with the order determined by a random draw made by the Meet Director.
- 5.1.2 Time permitting, and at the discretion of the Meet Director, reverse order of ranking may be used for all other rounds.

### 5.2. Jumping Procedure

- 5.2.1 The exit point is determined by the pilot in conjunction with the Meet Director. The aircraft pilot will signal the competitors when they are clear to exit. All the competitors will be briefed on the specific exit signals at the pre-event competitors meeting.
- 5.2.2 The exit delay between competitors must be such so as to ensure safe separation and be at least five (5) seconds.
- 5.2.3 The first person to exit on a pass turns 90 degrees to the right of the aircraft line of flight, the second turns 90 degrees left, and so on. All Competitors must turn to the appropriate direction immediately after their freefall trajectory is no longer affected by the forward throw/momentum of the aircraft. This is to prevent horizontal movement in the line of flight of the jump run. See Addendum A.

### 5.3. Exit Order

- 5.3.1 For safety reasons, the exit order in a jump run is determined by the personal best of the competitors. The exit order in a jump run is personal best descending.
- 5.3.2 There will be a maximum of six (6) competitors per exit pass, but this may be reduced by the Meet Director taking into consideration the aircraft size and the dropzone area.

### 5.4. Exit Altitude

- 5.4.1 Standard Exit Altitude: 13,000 ft. (3,962 meters) to 14,000 ft. (4,267 meters). It is the responsibility of the Meet Director in conjunction with the pilot(s) to make sure that the maximum and minimum exit altitudes (as measured by the approved SMD) are not exceeded.
- 5.4.2 For meteorological reasons or air traffic circumstances only, and with the consent of the USPA Controller and the Chief Judge, the Meet Director may reduce the minimum exit altitude by any amount down to 11,000 ft. (3,353 meters) to continue the competition. The maximum altitude and the performance window will be reduced by the same amount, but the breakoff altitude still remains 5,600 ft. (1,707 meters). Any one round must be completed with the same altitude parameters.

## Chapter 15: USPA National Speed Skydiving Championships Competition Rules

- 5.4.3 The maximum exit altitude for a valid jump is 14,000 ft. (4,267 meters) as measured by the approved competition SMD. A competitor should not exit the aircraft at a higher altitude than the maximum exit altitude. If the SMD registers a higher exit altitude than the maximum exit altitude, the jump will be considered as not valid and a rejump will be granted.
- 5.4.4 Minimum Exit Altitude: The minimum exit altitude for a valid jump is 13,000 ft. (3,962 meters) a competitor should not exit the aircraft at a lower altitude than the minimum altitude. If the SMD registers a lower exit altitude than the minimum exit altitude the competitor may choose to accept the score for the jump. The competitor must make an immediate decision and inform the Chief Judge of their decision; otherwise a rejump will be granted automatically.

### 5.5. Scoring Speed Skydiving

- 5.5.1 The score for a Speed Skydiving jump is the average vertical speed in kilometers per hour, to the nearest hundredth of a km/h, of the fastest 3 seconds, which the competitor achieves within the performance window.

## 6. Judging & Scoring

### 6.1. Scoring the Jump

- 6.1.1 Each performance shall be assessed by at least two National Speed Skydiving judges. USPA Speed Skydiving Judges in Training, provided they are under the direct supervision of the Chief of Judge Training or his designee, having attended the Judge's Conference, may be used in addition to the Official Panel of Judges.
- 6.1.2 One judge conducts the analysis of the jump and determines the appropriate score. The second judge checks the analysis and score before collation of the score sheet.
- 6.1.3 The data from the SMD is used to obtain the highest three (3) second average vertical speed through the course.
- 6.1.4 If a computer is used to analyze the data to obtain the speed, then the data must be downloaded as soon as possible after the competitor has handed in the devices, and before the SMD is used by another competitor.
- 6.1.5 If the speed is read directly from the device, then the readings are to be taken when the competitor turns in the SMD, the speeds are to be written directly onto the score sheets, and the competitor is to sign for the two speeds. The SMD may then be used for another competitor.
- 6.1.6 If the speed is obtained from data transmitted during the jump to a ground station or stations, the SMD may only be used by another competitor once it has been determined that valid data has been obtained.
- 6.1.7 The scores will not be final until the data have been reviewed. The Chief Judge is responsible for determining a competitor's final score and placing.

### 6.2. Collation of the Score Sheets

- 6.2.1 The scores are collated immediately after the judges have assessed the jump. The results of the collation must be checked by the Chief Judge.

### 6.3. Determining Placing

- 6.3.1 At the end of a completed round, the accumulation of the competitor's single scores is used to determine the competitor's total result. The total result for the competitor determines the ranking. The competitors are ranked in descending order of their total results.
- 6.3.2 While a round is in progress, unofficial results may be published. However, if the round does not get completed, the scores from the incomplete round must be discarded and the results must be amended to reflect the scores from the number of completed rounds.

### 6.4. Other Responsibilities

- 6.4.1 The Chief Judge may decide to interrupt the event if he considers that the meteorological conditions are not safe for the conduct of the event. This decision is not grounds for protest.

## 7. Classification Of Final Results

### 7.1. Determination of the Winners

- 7.1.1 The competitor with the highest score is the winner.
- 7.1.2 In the event of a tie in the first three places, the following rules apply:
  - 7.1.2.1 Where possible tie-break jumps shall be made.
  - 7.1.2.2 If this does not break a tie, then the competitor with the best result in any one round obtains the higher place.
  - 7.1.2.3 If the tie cannot be broken, the competitor concerned shall be declared co-medalists.
  - 7.1.2.4 All other ties shall be ranked equal.
- 7.1.3 Overall Champion: 1st place, 2nd place, 3rd place

# Addendum A – Exit Procedure

