Accelerated Freefall (AFF) Category B-H Training Aid

All training to be conducted by instructors of the:

Jump Institute

Look within. Leap beyond.
This Book Belongs to:
Important Notice and Disclaimer

**WARNING**

SPORT PARACHUTING, ALSO REFERED TO AS SKYDIVING, OR "JUMPING OUT OF A PERFECTLY GOOD AIRPLANE" IS A POTENTIALLY DANGEROUS AND HIGH RISK ACTIVITY THAT MAY BE HAZARDOUS AND MAY CAUSE OR RESULT IN SERIOUS INJURY OR DEATH TO ITS PARTICIPANTS, EVEN WITH PROPERLY FUNCTIONING EQUIPMENT. EACH INDIVIDUAL PARTICIPANT, REGARDLESS OF EXPERIENCE, HAS FINAL RESPONSIBILITY FOR HIS OR HER OWN SAFETY. PARTICIPATION IS VOLUNTARY. YOU MUST WEIGHT THE RISK AND THE REWARD.

Even properly designed, built, assembled, packed, maintained, and used parachutes sometimes malfunction. The results of such malfunctions are sometimes serious injury or death. If you are not willing to accept the risks of sport parachuting, then you should reconsider your involvement in sport parachuting. **USPA AND START SKYDIVING ARE NOT LIABLE FOR ANY JUMP OR TRAINING OPERATIONS THAT RESULT IN INJURY OR DEATH TO ANY PARTY.**

You must always read, follow, and comply with all warning labels, manuals, instructions, training, procedures, rules, regulations, requirements, and recommendations put forth and enforced by the manufacturers of all of your equipment and aircraft, the drop-zones and airports at which you are jumping, including Start Skydiving, LLC and the Middletown Regional Airport, the United States Parachute Association (USPA), and the Federal Aviation Administration (FAA).

USPA is a private, not-for-profit, non-regulatory, voluntary membership organization of the participants and supporters of the sport of parachuting, also referred to as skydiving, and has no legal authority to regulate or control individuals or corporations. All references by USPA to self-regulation refer to each individual person regulating or being responsible for him or herself. USPA issues various licenses, ratings, awards, and appointments and provides various types of information, advice, and training, but does not authorize anyone in any capacity to act for USPA as an agent or representative in connection with the regulation or control of skydiving operations. USPA is not involved in the conduct or operations of any skydiving center, parachute center, or drop-zone, including Start Skydiving.

Exercising proper precautions and procedures can enhance an individual’s safety. This manual contains some of the knowledge and practices that, in the opinion of USPA and Start Skydiving, will promote the safe enjoyment of skydiving. Regardless of any statements made in any publications, USPA and Start Skydiving have neither been given nor assumed any duty to anyone and shall have neither liability nor responsibility to any person or entity with respect to any loss or damage caused or allegedly caused directly or indirectly by the information contained in this book. USPA and Start Skydiving have no obligation to anyone concerning his or her skydiving activities. **USPA AND START SKYDIVING PRESENT THE FOLLOWING INFORMATION AS A SERVICE. USPA AND START SKYDIVING MAKE NO WARRANTIES OR REPRESENTATIONS, EXPRESSED OR IMPLIED, AS TO THE INFORMATION SET FORTH IN THIS MANUAL AND ASSUME NO LIABILITY CONCERNING THE VALIDITY OF ANY ADVICE, OPINION, OR RECOMMENDATION EXPRESSED IN THIS MATERIAL. ALL PEOPLE AND INDIVIDUALS RELYING ON THIS MATERIAL AND ITS INFORMATION DO SO AT THEIR OWN RISK.** It is the responsibility of each student to ask whatever questions are necessary for him or her to have a thorough understanding of the actions and procedures that he or she must perform in order to make a safe jump. Each skydiver has the responsibility to exercise certain practices and perform certain actions to maintain safety for himself or herself and for other people.

**Your skydiving instructor will be happy to explain any area of this book that is not clear to you.**
In Memory of Harry Short
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freefall (Pull) Priorities</td>
<td>1</td>
</tr>
<tr>
<td>Landing Priorities</td>
<td>1</td>
</tr>
<tr>
<td>Mental Relaxation: The Key to Body Flight</td>
<td>2</td>
</tr>
<tr>
<td>Category B</td>
<td>3</td>
</tr>
<tr>
<td>Category B Quiz</td>
<td>11</td>
</tr>
<tr>
<td>Category B Dive Flows</td>
<td>13</td>
</tr>
<tr>
<td>Category C</td>
<td>14</td>
</tr>
<tr>
<td>Category C Quiz</td>
<td>23</td>
</tr>
<tr>
<td>Category C Dive Flows</td>
<td>25</td>
</tr>
<tr>
<td>Visualization: Mind Over Body</td>
<td>26</td>
</tr>
<tr>
<td>Category D</td>
<td>27</td>
</tr>
<tr>
<td>Category D Quiz</td>
<td>32</td>
</tr>
<tr>
<td>Category D Dive Flows</td>
<td>34</td>
</tr>
<tr>
<td>Learning How to Spot One Jump at a Time</td>
<td>36</td>
</tr>
<tr>
<td>Category E</td>
<td>37</td>
</tr>
<tr>
<td>Category E Quiz</td>
<td>48</td>
</tr>
<tr>
<td>Category E Dive Flows</td>
<td>51</td>
</tr>
<tr>
<td>Category F-H: Group Skydiving Skills</td>
<td>53</td>
</tr>
<tr>
<td>Category F</td>
<td>54</td>
</tr>
<tr>
<td>Category F Quiz</td>
<td>62</td>
</tr>
<tr>
<td>Category F Dive Flow</td>
<td>64</td>
</tr>
<tr>
<td>Category G</td>
<td>65</td>
</tr>
<tr>
<td>Category G Quiz</td>
<td>73</td>
</tr>
<tr>
<td>Category G Dive Flows</td>
<td>76</td>
</tr>
<tr>
<td>Category H</td>
<td>77</td>
</tr>
<tr>
<td>Category H Quiz</td>
<td>85</td>
</tr>
<tr>
<td>Category H Dive Flows</td>
<td>87</td>
</tr>
<tr>
<td>USPA A-License</td>
<td>88</td>
</tr>
<tr>
<td>A-License Check Dive</td>
<td>89</td>
</tr>
<tr>
<td>A-License Proficiency Card</td>
<td>90</td>
</tr>
<tr>
<td>ISP: Student Skill and Knowledge Sets (Chart)</td>
<td>92</td>
</tr>
<tr>
<td>Hand Signals</td>
<td>93</td>
</tr>
<tr>
<td>The Open Parachute System</td>
<td>94</td>
</tr>
<tr>
<td>Middletown Regional Airport Overview</td>
<td>95</td>
</tr>
<tr>
<td>Freefall Time Table</td>
<td>96</td>
</tr>
<tr>
<td>Glossary</td>
<td>97</td>
</tr>
</tbody>
</table>
**Freefall Priorities**

1. Pull! Pull!! Pull!!! ALWAYS PULL!
2. Pull at the proper altitude. Always know your altitude!
3. Pull at the proper altitude while stable.

**Landing Priorities**

1. Land with your wing level and flying in a straight line. No low turns!
2. Land in a clear and open area, avoiding obstacles.
3. Flare to at least half brakes. Perform a parachute-landing fall (PLF).

**Other Good Advice**

Be altitude aware. It will save your life.

If you are unsure about something, ask an instructor.

Do not get discouraged. Take it one jump at a time.

Plan the dive, dive the plan, and always have a backup plan.

Seek professional coaching when learning new skills whenever possible.

Do not push yourself beyond your current capabilities.

Set SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goals.

Know when to say NO. Use good judgment to avoid dangerous situations outside of your comfort/skill level (i.e. jumping in high winds, borrowing equipment, large formation jumps, free flying, CRW, high performance landings, wingsuiting, etc...).

Have fun. ☺️
Mental Relaxation:
The Key to Body Flight

In the early Categories, like a magic mantra, you will hear repeatedly from your instructors: “Altitude, arch, legs, relax.” Managing all four points at once is the key to controlled freefall.

After altitude awareness, relaxing is your key goal. It takes only a little push from the hips to get an effective arch, and you usually need to extend your legs only a little to get use of them in the wind. However, you need to relax your other muscles a lot.

So how can a brand-new skydiver relax in such an adrenaline-charged, exciting, and new environment?

Sports psychologists all recognize the value of staying loose and mentally relaxed for peak performance. Many describe ways to achieve a state of prepared relaxation. Each athlete learns to develop one technique and uses it to gain that state before and maintain it during every performance.

Almost all the techniques begin with slower, deeper, controlled breathing. Learn to breathe from deep in your lungs, using the muscles of your diaphragm. Practice breathing in slowly until your lungs are full and then emptying your lungs completely when you breathe out.

While you practice controlled breathing, you can use one of several suggested devices to relax your mind and your body:

- Imagine yourself in a familiar, comfortable place, trying to visualize every sensual experience that you can associate with it: sight, sound, odor, taste, and touch. Picture the colors of the background and the details, try to smell the air as it would be, imagine you hear the sounds, and feel the air on your face. Imagine you just took a sip of your favorite drink.
- Relax your body part-by-part, starting with your toes, then your ankles, calves, thighs, hips, abdomen, etc., spending five to ten seconds in each place while continuing your controlled breathing.
- Count up to ten with each breath and then backward to zero.

There are many other relaxation techniques you can borrow or develop, but choose one and practice it until you perfect it, even when you are not skydiving. That way, you can relax yourself quickly and effectively whenever the need arises—such as just before a skydive.

As you are getting ready to jump, you should continue controlling your breathing. Move slowly and deliberately in the aircraft as you approach the door and get into position, not only to help you maintain your relaxed, prepared state for the jump, but also for safety. Take another breath just before you actually launch from the aircraft and another to help you settle into freefall as soon as you let go. Make breathing part of every sequence, especially as you go through your “altitude, arch, legs, relax” sequence.

While skydiving is inherently a high-speed sport, you will notice that the best skydivers never do anything in a hurry.
Category B
One Jump

In Category B, you learn to be more comfortable in the skydiving environment. You perform leg awareness exercises to improve control and may even perform assisted turns (if time) in preparation for heading maintenance in Category C and controlled turns in Category D. Training in this category reviews and expands your understanding of the canopy landing pattern and the airport environment, with attention to avoiding aircraft on or approaching the runways. You help with pre-flight planning and the use of the written flight plan, including the opening point, the projected wind line, and the landing pattern. In addition, you learn to use the runway as a reference for direction and distance when observing the drop zone from the aircraft or under canopy. Your emergency review emphasizes topics from the first-jump course on parachute malfunctions. In Category B, you become more responsible for your equipment, particularly while moving around and inside the aircraft. Study topics introduce USPA Basic Safety Requirements for student jumps. To advance, you should monitor altitude and deploy at the correct altitude without prompting from any instructors.

Learning and Performance Objectives

- Relaxing in the skydiving environment
- Heading awareness
- Parachute deployment
- More on the landing pattern
- Written flight plan
- Airport orientation
- Protecting handles
- Equipment emergency review

Rules and Recommendations

Review the USPA Basic Safety Requirements (BSRs) on supervision and progression requirements for students.

1. All student-training programs must be conducted under the direction and oversight of an appropriately rated USPA Instructor until the student is issued a USPA A-License.

2. A person conducting, training, or supervising student jumps must hold a USPA instructional rating according to the requirements that follow.

3. First-jump course:
   a. All first-jump non-method-specific training must be conducted by a USPA Instructor or a USPA Coach under the supervision of a USPA Instructor.
   b. All method-specific training must be conducted by a USPA Instructor rated in the method for which the student is being trained.

4. All students must receive sufficient training in the following areas to jump safely:
   a. Equipment
   b. Aircraft and exit procedures
   c. Freefall procedures
   d. Deployment procedures and parachute emergencies
   e. Canopy flight procedures
   f. Landing procedures and emergencies
5. Harness-hold program advancement criteria:
   a. All students must jump with two USPA AFF rating holders until demonstrating the ability to deploy reliably in the belly-to-earth orientation at the correct altitude without assistance.
   b. All students must jump with one USPA AFF rating holder, exit safely, maintain stability, and deploy at the planned altitude without assistance prior to attempting disorienting maneuvers.
   c. All students must jump under the direct supervision of an appropriately rated USPA instructor until demonstrating stability and heading control prior to and within five seconds after initiating two intentional disorienting maneuvers involving a back-to-earth presentation.

6. Student training for group freefall (Coach or AFF):
   a. Student freefall training for group freefall jumps must be conducted by either a USPA Coach under the supervision of a USPA Instructor or;
   b. USPA D-license holders provided there is a minimum ratio of one D-license holder to one student with a maximum of a four-way.

7. No skydiver will simultaneously perform the duties of a USPA instructional rating holder and pilot-in-command of an aircraft in flight.

8. All student jumps, including tandems, must be completed between official sunrise and sunset.

Review the BSRs on wind limits for students (waiverable by a USPA S&TA)

1. Maximum ground wind limits for all solo students (waiverable by a USPA Safety & Training Advisor) are 14 mph for ram-air reserve canopies and ten mph for round reserve canopies.

2. There are no wind limitations for licensed skydivers. Licensed skydivers must exercise judgement.

Review the BSRs on minimum required deployment altitudes for students

1. Minimum container opening altitudes above the ground for skydivers are:
   a. Tandem jumps: 4,500 feet AGL
   b. All students and A-license holders: 3,000 feet AGL
   c. B-license holders: 2,500 feet AGL
   d. C and D-license holders: 2,500 feet AGL (waiverable to a minimum altitude of 2,000 feet AGL)

BSRs on drop zone requirements for students and what are considered hazards

1. Areas used for skydiving should be unobstructed, with the following minimum radial distances to the nearest hazard:
   a. Solo students and A-license holders: 329 feet
   b. B and C-license holders: 165 feet
   c. D-license holders: 40 feet

2. Hazards are defined as telephone and power lines, towers, buildings, open bodies of water, highways, automobiles, and clusters of trees covering more than 32,292 square feet.

3. Manned ground-to-air communications (e.g., radios, panels, smoke, lights, etc....) are to be present on the drop zone during skydiving operations.
Equipment

1. Parachute deployment with opportunities for malfunctions explained (actually deploy it on the ground):
   a. Lost, missing, or unrecoverable main deployment handle
   b. Impossible main deployment handle extraction (hard pull)
   c. Pack closure (closing sequence, bridal routing, pin orientation, etc.)
   d. Pilot chute hesitation (burble)
   e. Pilot chute in tow
   f. Premature deployment (premature container opening)
   g. Pilot chute entangled with jumper or equipment
   h. Horseshoe
   i. Bag-lock
   j. Streamer
   k. Line-over
   l. Tension knots
   m. Fabric or line failure sufficient to interfere with control and flare (broken lines or canopy damage)
   n. Slider hang-up (stuck slider)
   o. Control-line entanglement

2. Review parachute retrieval after landing, including stowing toggles and daisy-chaining lines.

Spotting and Aircraft

1. Minimum, careful movement in the aircraft helps prevent premature activation.

2. Runway lengths and headings (use of a compass):
   a. The runway heading provides a reference for direction (north, south, east, and west).
   b. The runway length provides a reference for judging distance from the air (in tenths of a mile for GPS and Loran).

Note: The Middletown Airport’s runway is oriented 050°-230° (NE-SW) and is 6,100 feet in length.

3. Winds are described by their direction of origin, said as a compass heading (for example, "The winds are two-thirty," means the winds are blowing from the southwest).

4. Avoid runways and approaches, including getting clear of a runway after landing on or near one.

5. Crossing the runway:
   a. Avoid crossing the primary paved runway under canopy below 1,000’. Avoid ends below 2,000’.
   b. Before crossing on foot, stop at least 50 feet away from the edge of the runway and look towards both ends of the runway for aircraft both on the ground and in the air multiple times.
   c. If you see an aircraft about to take off or land, kneel on the ground until it has cleared the runway.
   d. Once the runway appears to be clear of all traffic, quickly run straight across the runway.
   e. As you are crossing, continue to scan for aircraft that may be taking off or landing.
   f. If you see an aircraft about to takeoff or land before you are halfway across, turn around and run at least 50 feet back into the grass on the side where you were before you started crossing.
   g. If you see an aircraft about to takeoff or land after you are halfway across, get off immediately by running forward until you are at least 50 feet into the grass on the other side.
6. Discuss local aircraft traffic approach altitudes and landing patterns and their relationship canopy approach and landing patterns. (Study the illustrations below.)

Illustrations B.1, B.2, and B.3: Normal flight practices separate aircraft and parachutes at airports, but jumpers need to respect the runways and approaches.

Note: All diagrams depict a non-towered, single-runway airport where no drop-zone has been established.
Exit and Freefall

1. Student-led exit (all students):
   a. Review the exit set-up from Category A. (Right hand, right foot, left hand, left foot.)
      (1) Climb-out and exit procedures prepare you to meet the relative wind in a stable, belly-first
          freefall body position.
          (a) Move to climb-out into position using practiced steps for efficient placement in the door.
          (b) The pre-launch position set-up should place your belly (pelvis) into the relative wind as part
              of the launch from the plane.
      (2) Count: Verify that the instructors are ready.
          (a) Call “Check in!” the inside instructor, who responds, “OK!”
          (b) Call “Check out!” the outside instructor, who responds, “OK!”
          (c) Take a deep breath to relax and then begin a verbal and physical cadence of three (“Up,
              down, arch!”) to help the instructors leave simultaneously with you.
          (d) On “ARCH!” take a deep breath to relax and look up and watch the plane fly away.
          (e) After stepping off of the plane, count out loud by thousands to five-thousand, then do a CoA
          (f) You must exit soon after climb-out to ensure that you open the parachute over the correct
              place on the ground.

2. Altitude awareness to recognize & act at the assigned pull altitude is the most important task in freefall

3. "Altitude, arch, legs, relax": Repeat to establish and maintain awareness, stability, and control.
   a. Know your altitude.
   b. Check your arch (hips forward a little).
   c. Check your legs (most beginners need to extend their legs a little and point their toes).
   d. Relax.
      (1) Consciously breathe deeply in and out to release tension.
      (2) Use this technique just before and after releasing from the aircraft.

4. You practice leg awareness by extending legs while arms remain in a neutral position.
   a. Extending the legs from the neutral position adds more drag in the back, lifting your lower body.
   b. The off-level attitude causes you to slide forward on the deflected air.
   c. Hold the position for three seconds and return to neutral to cancel the effect.
   d. Finish all maneuvers 1,000 feet above wave-off altitude or 6,000 feet, whichever comes first.

5. Maintaining a heading:
   a. First, relax into a comfortable neutral body position.
   b. Find a point ahead on the horizon as a heading reference.
   c. If turns are performed:
      (1) Check the altitude.
      (2) Turn head to the side and pick new heading 90° to current heading.
      (3) Initiate a 90° turn by dipping the shoulder on the side that you wish to turn toward and twisting
          your upper body at the waist while keeping your arms fixed to deflect air to one side.
      (4) Stop the turn by returning to a neutral body position once your body is pointing at the heading
      (5) Check the altitude.
      (6) Repeat in the opposite direction if time permits.

6. Deployment:
   a. Perform at least three consecutive unassisted practice pilot-chute touches or continue to perform
      more until they are smooth and you comfortable with locating the deployment handle in freefall.
   b. Wave-off to signal deployment at 5,500 feet.
   c. Pull by 4,000 feet without prompts or assistance from any instructors.
Emergency Procedure Review

1. **You must always practice your emergency procedures before your first jump of each day!**
2. Deploy at the correct altitude, regardless of stability. (Review all three pull priorities.)
3. Review and practice recognizing and responding to deployment handle problems for manual activation:
   a. Make only two attempts or two seconds, whichever comes first, to correct the problem before initiating emergency procedures.
   b. The correct response to lost deployment handle:
      (1) Sweep bottom of container for only one second, then down the side of container to the corner for one second only.
      (2) If the main deployment handle cannot be located after two tries or two seconds, whichever comes first, deploy the reserve immediately.
      (3) If deploying the pilot chute results in another malfunction, cut away and deploy the reserve.
   c. The correct response to a stuck main deployment handle (hard pull):
      (1) Place elbow against container for leverage.
      (2) If the main deployment handle cannot be deployed after two tries or two seconds, whichever comes first, deploy the reserve immediately.
      (3) If deploying the pilot chute results in another malfunction, cut away and deploy the reserve.
3. Review and practice the correct response to a pilot chute hesitation (burble) or pilot chute in tow:
   a. Twist at the waist and look over the right shoulder to modify the airflow for only one second.
   b. Repeat over the left shoulder for only one more second.
   c. If the pilot chute does not deploy or the container does not open after twisting right and left for one second each, then cutaway and deploy the reserve immediately.
4. Review premature container opening in freefall for hand deployment:
   a. Attempt to locate the main deployment handle and deploy the pilot chute first.
   b. If the pilot chute cannot be located or deployed after two tries or two seconds, whichever comes first, or if deploying the pilot chute results in another malfunction, cut away & deploy the reserve.
5. Review and practice common problems in the training harness in order of correction:
   a. The correct response to line twist(s):
      (1) Spread the risers and kick to untwist, leaving the toggles stowed until all twists are cleared.
      (2) If spinning, twist risers to untwist the lines & stabilize canopy, then kick to untwist the risers.
      (3) If you cannot correct all line twists by 2,500 feet, cut away and deploy the reserve.
   b. The correct response to slider hang-up (stuck slider):
      (1) Pull both toggles down to the full flare position to slow the canopy and pump at the bottom of the control range between three-quarter brakes and full flare.
      (2) If unable to use the toggles, pump the rear risers smoothly between full flight and full flare.
      (3) The slider needs to be at least halfway down and pass a controllability check for a safe landing.
      (4) Repeat remedial procedures twice or until reaching the decide-and-act altitude of 2,500 feet, whichever comes first.
   c. The correct response to end-cell closure(s):
      (1) Pull both toggles down to the full flare position and hold them there until the end cells open and then let them back up to full flight smoothly.
      (2) If unable to use the toggles, perform a full flare using both rear risers.
      (3) If the closed end cells cannot be inflated, evaluate controllability and flare before reaching the decide-and-act altitude of 2,500 feet.
   d. If the canopy has opened normally but turns on its own, release both toggles to full flight by performing a full flare.
   e. Evaluate controllability and flare before reaching the decide-and-act altitude of 2,500 feet for:
      (1) Broken steering line(s) or toggle(s): Use rear risers.
      (2) Broken suspension line(s)
      (3) Pilot chute entangled with the canopy or in the lines
      (4) Canopy damage, such as rips or tears
6. Review and practice for recognizing and responding to total and partial high-speed malfunctions:
   a. Total high-speed malfunction (unable to locate or extract the main deployment handle): Cannot activate or deploy your main parachute after two tries or two seconds, whichever comes first.
      (1) ARCH! Return to the arch position.
      (2) LOOK for, locate, and LOCK your eyes onto the reserve ripcord handle.
      (3) HOOK the reserve ripcord handle with your left hand and secure your grip with the right hand.
      (4) PEEL, PULL, and STRIP the reserve handle all the way out to activate the reserve parachute.
      (5) ARCH! Maintain the arch position as the reserve deploys.
      (6) TWIST RIGHT and LEFT for one second each while checking over each shoulder for reserve pilot chute deployment.
   b. Perform these same emergency procedures for any type of malfunction below 1,000 feet.
   c. Partial high-speed malfunction: The main pilot chute has left the container, but the main canopy is either not deploying or not inflating at all after two tries or two seconds, whichever comes first.
      (1) ALTITUDE! Check your altitude to ensure you are still above 1,000 feet.
      (2) ARCH! Return to the arch position.
      (3) LOOK for and locate the cutaway handle.
      (4) GRAB the cutaway handle with your right hand first and secure your grip with the left hand.
      (5) LOOK for, locate, and LOCK your eyes onto the reserve ripcord handle.
      (6) PEEL, PULL, and STRIP the cutaway handle while keeping eyes locked onto the reserve handle.
      (7) Immediately HOOK the reserve ripcord handle with left hand and secure grip with right hand.
      (8) PEEL, PULL, and STRIP the reserve handle all the way out to activate the reserve deployment.
      (9) ARCH! Maintain the arch position as the reserve deploys.
      (10) TWIST RIGHT and LEFT for one second each while checking over each shoulder for reserve pilot chute deployment.

7. Review minimum cutaway altitude and reserve deployment without cutaway if necessary:
   a. You should decide if you are going to cut away and take the appropriate actions by 2,500 feet.
   b. If below 1,000 feet without a functioning main canopy, deploy the reserve immediately!
   c. If in a canopy entanglement with another jumper below 1,000 feet and both of the canopies are uncontrollable and it appears that they cannot be separated in time for a safe landing, both of you should deploy your reserves immediately!
   d. Both parachutes deployed (two canopies out):
      (1) Stable biplane:
         (a) Do NOT cutaway! Leave the toggles stowed on both canopies.
         (b) Gently steer the front canopy by smoothly pulling on the rear risers of the front canopy.
         (c) Only use as minimal input as necessary to maneuver the canopy for a safe landing.
         (d) Land both canopies without flaring. Perform a parachute-landing fall (PLF) on landing.
      (2) Stable side-by-side with directional control:
         (a) Leave the toggles stowed on both canopies and gently steer the dominant canopy (larger and more directly overhead) by smoothly pulling on the rear risers of the dominant canopy.
         (b) Only use as minimal input as necessary to maneuver the canopy for a safe landing.
         (c) Land both canopies without flaring. Perform a parachute-landing fall (PLF) on landing.
      (3) Down-plane or pinwheel:
         (a) Disconnect the reserve static line (RSL) if altitude/time permits (above 1,000 feet).
         (b) Immediately cut away the main canopy, regardless of altitude. Steer the reserve to landing.
      (4) Main-reserve entanglement:
         (a) Do NOT cutaway! Do everything possible to attempt to clear the entanglement of the two canopies by pulling on the risers or toggles of the canopy with the highest chance of inflating. Once one canopy is fully inflated, start trying to inflate the other canopy by pulling on the risers or toggles. NEVER give up! Perform a parachute-landing fall (PLF) on landing.
   e. Premature deployment in aircraft:
      (1) You should attempt to contain and secure the open parachute, inform the instructor, close the door, and land with the plane.
      (2) If your parachute goes out the door, you must follow it immediately before being extracted.
Canopy

1. Always look first in the direction of a turn under canopy before and during the turn.

2. Using a DZ photo (Page 98) or taking a walk in the field, you will preview with an instructor the expected opening point and prepare a written flight plan together.

3. Review the descent strategy:
   a. Determine position and altitude upon opening.
   b. Locate the target and establish a line to the pre-planned 1,000-foot pattern entry point.
   c. Divide the line logically in thousands of feet according to the remaining altitude (halfway down, halfway back). For example, if open at 4,000 feet:
      (1) Divide the line in thirds and fly over the first third of the line until 3,000 feet.
      (2) Fly over the second third of the line until 2,000 feet.
      (3) Alternatively you can divide the line in half and remain over the first half of the line until 2,500’.

4. Fly over the remaining division of the line until reaching the instructor-assigned pattern entry at 1,000 feet, as identified on the written flight plan.

5. Fly the pre-planned pattern using downwind, base, and final approach legs, with specific points to fly over at specified altitudes.

6. Fly a straight-in final approach without S-turns (S-turns present a hazard to other traffic).

7. Flare at ten feet, based on experience in Category A.
   (Note: Flaring is covered in more detail in Categories C and F.)

8. Review the PLF and its value to protect parachutists against the shock a hard landing:
   a. Parachutists absorb the shock of a hard landing with a Parachute Landing Fall (PLF).
      (1) To prepare for a PLF, press your feet and knees tightly together with your knees slightly bent.
      (2) Flare the canopy completely with both hands together and into your groin to help prevent wrist and hand injuries.
      (3) Bring your chin down to your chest to help prevent neck injuries.
      (4) Allow the balls of your feet to make first contact with the ground.
      (5) Maintain the PLF position throughout the entire landing roll.
      (6) As soon as the balls of your feet first touch the ground:
         (a) Lean into the direction of the landing to roll down one side of the body.
         (b) Lay over to the side of one calf.
         (c) Continue to roll to the thigh on the same side.
         (d) Continue rolling on to that hip (side of the butt).
         (e) Roll diagonally across your back to the opposite shoulder.
         (f) Allow your body to continue rolling and absorb the energy of the fall.
   b. The PLF position is also the proper way to prepare for a stand-up landing.
      (1) The PLF position keeps your weight balanced in the harness and helps avoid the tendency to reach for the ground.
      (2) If you touch down softly, you can step out of the PLF position and remain on your feet.
Category B Quiz
(Must be passed before Category B jump.)

1. Who must directly supervise your student training jumps?
   a) USPA Instructor rated for my discipline
   b) The local Safety and Training Advisor
   c) Drop zone owner/operator

2. What is your most important task when in freefall?
   a) Correctly complete planned dive flow
   b) Altitude awareness to recognize and act at the assigned pull altitude
   c) Fall stable and on heading

3. What are the maximum winds in which any student may jump?
   a) 15 mph
   b) 10-15 mph, depending on conditions and individual student ability
   c) 10 mph for a round reserve canopy; 14 mph for a ram-air reserve, can be waived by an S&TA

4. How would you clear a pilot chute hesitation?
   a) Pull harder.
   b) Wait for the AAD to fire.
   c) Change body position to modify the airflow over my back.

5. In the event of a canopy problem, students should decide and act about executing emergency procedures by what altitude?
   a) 2,000 feet
   b) 2,500 feet
   c) 3,000 feet

6. How would you address the following routine opening problem: Twisted lines?
   a) Before releasing the brakes, spread risers or twist risers to transfer line twist to risers, kick in opposite direction, watch altitude to 2,500 feet.
   b) Cut away and deploy the reserve.
   c) Pump rear risers or steering controls at the bottom of the stroke while watching altitude to 2,500’.

7. How would you address the following routine opening problem: Slider stops halfway down?
   a) Pull toggles to flare position and hold (or pull down rear risers and hold) and watch altitude. If stubborn, determine controllability with turn and flare by 2,500 feet.
   b) Pump rear risers or steering controls at the bottom of the stroke while watching altitude to 2,500’.
   c) Cut away and deploy the reserve.

8. How would you address the following routine opening problem: Closed end cells?
   a) Make hard left and right turns in rapid succession to inflate each cell individually.
   b) Pump rear risers or steering controls at the bottom of the stroke while watching altitude to 2,500’.
   c) Pull toggles to flare position and hold (or pull down rear risers and hold) and watch altitude. If stubborn, determine controllability with turn and flare by 2,500 feet.

9. How would you address the following routine opening problem: Broken lines or other damage?
   a) Determine controllability and ability to flare by 2,500 feet.
   b) Cut away and deploy the reserve.
   c) Pump rear risers or steering controls at the bottom of the stroke while watching altitude to 2,500’.
10. How would you address the following routine opening problem: Good canopy that is turning?
   a) Be sure both brakes are released.
   b) Pump rear risers or steering controls at the bottom of the stroke while watching altitude to 2,500’.
   c) Cut away and deploy the reserve.

11. What is the appropriate action if below 1,000 feet without a landable parachute?
   a) Cut away and deploy the reserve.
   b) Do not cutaway, immediately deploy the reserve parachute.
   c) Wait for AAD to fire.

12. If the pilot chute goes over the front of the canopy after it has opened, how can you tell if it is a malfunction?
   a) If the canopy flares and turns correctly, it is probably safe to land.
   b) If the pilot chute is fully inflated, it is a malfunction.
   c) If the pilot chute is not fully inflated, it is a malfunction.

13. What is the correct response to an open container in freefall using a hand-deployed system?
   a) No more than two tries or two seconds to locate and deploy the main pilot chute; if no success, cut away and deploy the reserve.
   b) Cut away and deploy the reserve.
   c) Immediately deploy the reserve parachute, but not below 1,000 feet with an SOS system.

14. If the pilot chute extracts the deployment bag from the parachute container (backpack) but the deployment bag fails to release the parachute canopy for inflation, what is the correct response?
   a) Determine controllability and ability to flare by 2,500 feet.
   b) Do not cut away, immediately deploy the reserve parachute.
   c) Cut away and deploy the reserve.

15. If part of the deployed parachute is caught on the jumper or the equipment (horseshoe), what is the correct response?
   a) Immediately deploy the reserve parachute.
   b) Cut away and deploy the reserve.
   c) No more than two tries or two seconds to locate and deploy the main pilot chute; if no success, cut away and deploy the reserve.

16. What are the three legs of the canopy landing pattern with relation to the wind direction?
   a) Downwind (with the wind), base (across the wind but downwind of the target), final (with the wind)
   b) Downwind (with the wind), base (across the wind but downwind of the target), final (into the wind)
   c) Downwind (against the wind), base (across the wind but upwind of the target), final (into the wind)

17. Why is it undesirable to land at the end of a runway?
   a) Approaching and departing aircraft
   b) Turbulent winds
   c) FAA regulations
Category B Dive Flows
Two AFF Instructors

Freefall Dive Flow

- Exit in a relaxed arch. (Must be stable within ten seconds of exit to pass.)
- Instructors release arm grips.
- Perform the first full Circle of Awareness.
- Three consecutive practice touches without assistance, or more until comfortable.
- Perform the second full Circle of Awareness.
- Perform a short CoA (Altitude, arch, legs, relax).
- Extend legs for three seconds and hold.
- Smoothly return legs to ideal 45° position.
- Perform a short CoA (Altitude, arch, legs, relax).
- Team turns, if altitude permits (above 6,500 feet). (L 45-90° turn, Altitude, R 45-90° turn, Altitude)
- Repeat as altitude permits. No new maneuvers below 6,500 ft. Stop final maneuver by 6,000 ft.
- Lock on to the altimeter at 6,000 feet.
- Begin wave-off at 5,500 feet.
- Pull by 4,500 feet (without prompting to pass).

Canopy Dive Flow

- Check altitude.
- Assess the canopy by asking, “Is it there? Is it square? Is it stable and steerable?”
- Correct any common canopy problems by 2,500’
- Unstow the toggles from half brakes by pulling them down to your groin & letting them back up.
- Check altitude.
- Full flare for five seconds.
- Smoothly let toggles all the way back up to return the canopy to full flight.
- Check altitude
- Look left and turn left at least 90°.
- Check altitude.
- Look right and turn right at least 90°.
- Check altitude.
- Full flare for five seconds.
- Check altitude, position, and traffic.
- Find landing area and pattern entry point.
- Divide flight path by thousands of feet.
- Look at runway & determine compass heading.
- Identify suspect areas of turbulence.
- Verify landing pattern & adjust as necessary.
- Steer over correct portion of flight path until 1,000 feet.
- Look for obstacles around the landing area.
- Follow pre-assigned pattern over the planned or alternate landing area.
- Prepare to PLF once on final at 300 feet.
- Begin to flare quickly to half brakes at ten feet.
- Finish flare to groin just before the balls of your feet touch the ground.

HAVE YOU JOINED USPA?

The United States Parachute Association represents and works for skydivers like you. USPA maintains FAA-recognized skydiving training, licensing, and rating programs, sanctions competitions and much more.

As a USPA member, you receive third-party personal liability and property damage skydiving insurance coverage.

Maintaining a strong association of skydivers requires your participation. Please join at your local drop zone, on line at www.uspa.org, or call (540) 664-9740.

Advancement Criteria

Freefall and Exit

- Stability within 10 secs of exiting the aircraft
- Maintain correct body position for stability throughout, including leg awareness & control
- Initiate deployment procedures within 500 feet of assigned altitude without prompts

Equipment

- Understanding routine canopy problems and the correct responses

Canopy

- Understanding & planning descent strategy from opening to pattern entry and pattern principles
- Steering with clearance procedures without prompting (self-evaluated)
- Assisted flare for a safe landing within 30° of heading into the wind
Category C
Two Jumps

By this time you have had the opportunity to learn relaxed, controlled, and stable freefall by using the procedure, "altitude, arch, legs, relax." You will begin this category with two AFF Instructors, but you will need to jump with only one before being able to advance to Category D. You need to establish confidence and relaxed freefall control. A controlled freefall in Category C may include some random heading drift, which you learn to lessen by relaxing and focusing on the basics: altitude, arch, legs, and relax. The instructor shows you more about how to plan a canopy pattern for various wind speeds and directions to improve traffic flow and avoid conflicts with obstacles and other jumpers. You learn to predict, avoid, and react to turbulence induced by wind over obstacles and heated areas. You will learn ways to approach an off-field landing, and your instructor explains how off-field landings may affect neighbor relations. You will meet the FAA-rated parachute rigger, who packs and maintains the reserve parachute. He or she will familiarize you with the closed parachute system, and you will observe the pre-flight equipment check. Emergency review includes discussion on an inadvertently opened parachute in and around the aircraft, as well as how to avoid and respond to it. In addition, your instructor also provides more details on recognizing and avoiding landing obstacles, as well as how to approach off-field landings.

### Learning and Performance Objectives

- Unassisted freefall with heading maintenance
- Hover control
- Solo deployment
- Landing patterns for higher winds
- Downwind landings
- Wing loading
- Accidental opening review
- Turbulence
- Landing off
- Obstacle recognition
- The FAA rigger
- The closed parachute system

### Rules and Recommendations

**Student gear Basic Safety Requirements (BSR) (SIM Section 2-1.L.2 through 5)**

1. All students are to be equipped with the following equipment until they have obtained a USPA license:
   a. A rigid helmet (except tandem students)
   b. A piggyback harness and container system that includes a single-point riser release and an RSL
   c. A visually accessible altimeter (except tandem students)
   d. A functional AAD that meets the manufacturer’s recommended service schedule
   e. A ram-air main canopy suitable for student use
   f. A steerable reserve canopy appropriate to the student’s weight
   g. For freefall, a ripcord-activated, spring-loaded, pilot-chute-equipped main parachute or a bottom-of-container (BOC) throw-out pilot chute

2. Students must receive additional ground instruction in emergency procedures and deployment-specific information before jumping any unfamiliar system.

3. For each harness-hold jump, each AFF rating holder supervising the jump must be equipped with a visually accessible altimeter.

4. All skydivers wearing a round main or reserve canopy and all solo students must wear flotation gear when the intended exit, opening, or landing point is within one mile of an open body of water (an open body of water is defined as one in which a skydiver could drown).
FAA regulations for the training and certification of the FAA rigger (FAR 65)

1. To be eligible for a parachute rigger certificate, a person must:
   a. Be at least 18 years of age;
   b. Be able to read, write, speak, and understand the English language, or, in the case of a citizen of Puerto Rico, or a person who is employed outside of the United States by a U.S. air carrier, and who does not meet this requirement, be issued a certificate that is valid only in Puerto Rico or while he is employed outside of the United States by that air carrier, as the case may be; and
   c. Comply with the sections of FAR 65 that apply to the certificate and type rating he seeks.

2. Current or former military riggers are entitled to a senior parachute rigger certificate if he/she passes a written test on the regulations of FAR 65 and presents satisfactory documentary evidence that:
   a. He/she is a member or civilian employee of an Armed Force of the United States, is a civilian employee of a regular armed force of a foreign country, or has, within the 12 months before he applies, been honorably discharged or released from any status covered by this paragraph;
   b. He/she is serving, or has served within the 12 months before he applies, as a parachute rigger for such an Armed Force; and
   c. He/she has the experience required listed below for a senior parachute rigger certificate.

3. All other applicants for a senior parachute rigger certificate must meet the following requirements:
   a. Present evidence satisfactory to the Administrator that he has packed at least 20 parachutes of each type for which he seeks a rating, in accordance with the manufacturer's instructions and under the supervision of a certificated parachute rigger holding a rating for that type or a person holding an appropriate military rating.
   b. Pass a written test, with respect to parachutes in common use, on:
      (1) Their construction, packing, and maintenance;
      (2) The manufacturer's instructions;
      (3) The regulations of FAR 65; and
   c. Pass an oral and practical test showing his/her ability to pack and maintain at least one type of parachute in common use, appropriate to the type rating he/she seeks.

4. An applicant for a master parachute rigger certificate must meet the following requirements:
   a. Present evidence satisfactory to the Administrator that he has had at least 3 years of experience as a senior parachute rigger and has satisfactorily packed at least 100 parachutes of each of two types in common use, in accordance with the manufacturer's instructions:
      (1) While a certificated and appropriately rated senior parachute rigger; and/or
      (2) While under the supervision of a certificated and appropriately rated parachute rigger or a person holding appropriate military ratings.
      (3) An applicant may combine experience specified above to meet these requirements.
   b. If the applicant is not the holder of a senior parachute rigger certificate, pass a written test, with respect to parachutes in common use, on:
      (1) Their construction, packing, and maintenance;
      (2) The manufacturer's instructions; and
      (3) The regulations of FAR 65.
   c. Pass an oral and practical test showing his/her ability to pack and maintain two types of parachutes in common use, appropriate to the type ratings he/she seeks.
Study FAR 105.43.b.1 regarding periodic inspection and repacking of reserves

The reserve parachute must have been packed by a certificated parachute rigger within 180 days before the date of its use, if its canopy, shroud, and harness are composed exclusively of nylon, rayon, or similar synthetic fiber or material that is substantially resistant to damage from mold, mildew, and other fungi, and other rotting agents propagated in a moist environment.

**Equipment**

1. The automatic activation device (AAD):
   a. Activates the main or reserve parachute.
   b. Is worn only as a backup.
   c. *Note: Detailed AAD operation is explained in Category D.*

2. Observe the instructor performing the pre-flight check:
   a. Top to bottom, (back):
      1. Reserve pin in place and straight
      2. Reserve closing loop worn no more than 10%
      3. Reserve ripcord cable movement in housing
      4. Reserve packing data card and seal (especially on an unfamiliar or rental rig)
      5. AAD turned on and/or calibrated
      6. Main activation cable or pin in place, free of nicks or kinks
      7. Main closing loop worn no more than 10%
      8. Pilot chute bridle routing or ripcord cable movement
      9. Main activation handle in place
   b. Top to bottom, (front):
      1. Overview operation of three-ring release: pulling the cable releases the rings
         *(Note: Pre-flight details for the three-ring release are covered in Category D. Disassembly and maintenance is explained in Category H.)*
      2. RSL connection, routing, and basic function to back up the jumper in pulling the reserve following a cutaway *(Note: Comprehensive RSL operation is explained in Category E.)*
      3. Chest strap and hardware intact
      4. Cutaway handle in position
      5. Reserve handle in position
      6. Leg straps and hardware operational and correctly threaded

**Spotting and Aircraft**

1. The landing pattern is square on a calm day, with each leg based on the canopy’s projected glide distance from 300 feet of altitude (see Illustration C.1 on opposite page 17).
   a. Each jumper must know his or her own canopy’s glide distance from 300 feet in no wind to plan a pattern.
   b. The instructor estimates the 300-foot no-wind glide distance for beginning students.

2. The planned final approach must be shortened from the known zero-wind square pattern as the wind increases; for example, cut the final approach approximately in half for ten mph.

3. The base leg also shortens as the wind increases; for example, also cut the base leg approximately in half for a ten-mph wind.

4. Plan the 1,000-foot pattern entry point farther upwind as winds increase; for example, double the length of the downwind leg used for calm conditions, ending at the new projected 600-foot point for ten-mph winds.
Exit and Freefall

1. Review of smooth climb-out and exit (minimal assistance):
   a. Exact hand and foot placement (right hand, right foot, left hand, left foot)
   b. Smooth launch to reduce momentum
   c. Correct presentation of hips and chest to the relative wind
   d. Legs out for a few seconds to add control

2. Single-instructor exit (second AFF jump in Category C):
   a. Revise the climb-out procedure for one instructor.
   b. Prepare for slightly different results after launch with one instructor (typically more vertical).

3. Review of stability recovery and maintenance "altitude, arch, legs, relax":
   a. A.I.R.: Provided you are Altitude aware, In control, and Relaxed (AIR), you may continue in freefall and deploy at the assigned altitude.
   b. Five-Second Rule: If you are above your assigned deployment altitude but cannot control your freefall (spinning rapidly or tumbling) for more than five seconds, deploy your main canopy immediately. Deploy your main canopy at the assigned deployment altitude regardless of stability.
   c. Roll-Out-of-Bed (ROB) Technique: If you are above your assigned deployment altitude and falling in a back-to-earth orientation, roll to one side to recover to a stable, belly-to-earth body position. Check altitude, arch, look towards the ground to the right, bring the right arm in across your chest, as your body rolls to the right and you are facing the ground bring your right arm back to the freefall position. Check altitude.
   d. Know the altitude by reading the altimeter or counting from exit (depending on exit altitude).
   e. Arch at the hips to improve belly-to-wind stability.
   f. Check your leg position and adjust as needed (probably extend to 45 degrees).
   g. Relax by taking a breath and letting go of unwanted body tension.
   h. Recognize heading changes and actively correct as jump continues.
4. Alternate free-fall altitude references:
   a. Judge altitude by keeping track of time (~10 sec for first 1,000’ and 5.5 sec per 1,000’ thereafter)
   b. Look at the ground during the climb to altitude and cross check against the altimeter.
   c. Observe the cloud bases on the ride to altitude to use later as an altitude reference.
   d. Look at the ground after initiating deployment and while waiting for inflation; check what you observed against the altimeter after opening.

Emergency Procedure Review

1. Open parachute in aircraft:
   a. Extreme care is required when leaning back against anything in aircraft.
      (1) Be mindful of the size of the parachute equipment when climbing into and moving about the aircraft.
      (2) Minimum, careful movement in the aircraft and during climb-out and exit helps prevent premature activation.
   b. Importance of a pre-jump equipment check before leaving the aircraft.
   c. Importance of careful movement near or outside the door, especially with an AAD.
      (1) Use caution when wearing an AAD, especially near an open aircraft door and during climb-out.
   d. If a parachute opens in the plane:
      (1) If door is closed, secure the open parachute, inform an instructor, and land with the plane.
      (2) If the door is open, contain the open parachute, close the door, and land with the plane.
      (3) If the parachute goes out the door, so must the jumper.

2. Review pull priorities are in the following order of importance (top down):
   (1) Pull! Pull! Pull! ALWAYS PULL, REGARDLESS OF ALTITUDE OR STABILITY!
   (2) Pull at the correct altitude! Always deploy at the planned altitude, regardless of stability!
   (3) Pull at the correct altitude while stable.

3. If an off-DZ landing is unavoidable:
   a. Look for an open, clear, accessible field.
   b. Decide on an alternate landing area by 2,000 feet.
   c. Fly a predictable landing pattern.
   d. Transpose the planned landing pattern from the intended field onto the alternate field.
   e. Land well clear of turbulence and obstacles.
   f. Prepare for a hard landing in any unfamiliar landing area.
   g. Be considerate of the property owner when leaving the landing area:
      (1) Cross only at gates or reinforced areas.
      (2) Leave all gates as they are found.
      (3) Do not disturb cattle.
      (4) Walk parallel to (between) any rows of crops until reaching the end of the field.
      (5) Repair or replace any damaged property.

4. Review of landing priorities:
   a. Land with the wing level & flying in a straight line, at least for the last ten seconds of canopy flight.
   b. Land in an open area, at least 329 feet clear of any obstacles.
   c. Flare to at least the half-brake position and prepare to perform a parachute-landing fall (PLF).

5. Collapse an inflated canopy on landing by pulling in one toggle and running toward it.
Canopy

1. Wing loading and canopy size:
   a. The wing-loading ratio is the jumper's exit weight (geared up) divided by the square footage of the canopy.
   b. The canopy manufacturer publishes wing loading or load recommendations for each model of canopy:
      (1) In the canopy owner's manual
      (2) On the manufacturer's website
   c. Canopy performance changes with wing loading:
      (1) With a heavier wing loading, expect:
          (a) Faster forward speed
          (b) Faster descent rate
          (c) Quicker turns
          (d) Steeper and longer dive from a turn
          (e) More violent malfunctions
          (f) More skill to flare correctly
      (2) With a lighter wing loading, expect:
          (a) Less drive against a strong wind
          (b) Slower turns
          (c) More forgiveness of landing errors
          (d) Less predictable in turbulence
   d. Use the examples below to calculate your own wing loading for the canopy you are about to jump
      (one of the Category C advancement criteria) (See Illustration C.2 below.).

   
   
<table>
<thead>
<tr>
<th>WING LOADING EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A jumper's exit weight</td>
</tr>
<tr>
<td>divided by canopy size (sq. ft.)</td>
</tr>
<tr>
<td>equals his/her wing loading:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>215</td>
</tr>
<tr>
<td>280</td>
</tr>
<tr>
<td>=0.77:1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>A jumper's exit weight</td>
</tr>
<tr>
<td>divided by canopy size (sq. ft.)</td>
</tr>
<tr>
<td>equals his/her wing loading:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>215</td>
</tr>
<tr>
<td>195</td>
</tr>
<tr>
<td>=1.1:1</td>
</tr>
</tbody>
</table>

Illustration C.2 - Examples of how to calculate wing loading.

e. Canopies may appear easier to land with more weight, to a point:
   (1) A good landing in ideal conditions does not mean a smaller canopy is safe to jump in all
   conditions.
   (2) A more highly loaded canopy will stall at a higher airspeed.

f. With the same wing loading a smaller canopy of the same model will exhibit more lively
   performance characteristics:
   (1) Faster turns and turn response
   (2) Quicker dynamic stall response

2. Converting forward speed to lift:
   a. Flaring the canopy quickly to half brakes causes the canopy to slow down abruptly.
   b. Your momentum causes you to swing forward briefly, raising the front of the canopy and flattening
      the glide.
   c. Continue to flare, braking the canopy more and holding the high nose angle to maintain your lift
      while reducing the forward speed.
d. Time your flare so your feet touch the ground before you begin to swing back under the canopy (dynamic stall) or begin to fly backwards (full stall) (See Illustration C.3 below.).

Illustration C.3 - When flared perfectly, the canopy lets the jumper down just prior to the stall.

3. Turbulence sometimes occurs in the landing area:
   a. Anticipate turbulence 10-20 times the height of an obstacle on the downwind side (see illustration)

   Turbulence occurs downwind of an obstacle at 10 to 20 times its height, depending on the wind’s strength.

   b. The effects and likelihood of turbulence increase with wind speed.

   c. Turbulence often occurs:
      (1) Near runways
      (2) Alongside roads
      (3) Where two areas of different colors or textures meet
      (4) Behind other canopies (wake turbulence)
      (5) Over irregular terrain
(6) Downwind of the propeller wash of a taxiing aircraft (See Illustration C.5)

Illustration C.5 - Airplane propellers create turbulence.

4. When flying in turbulence:
   a. Maintain the desired heading using smooth but effective toggle input.
   b. Fly full speed or as directed in canopy owner's manual.
   c. Prepare for a hard landing.

5. Recognition of a clear field:
   a. Power lines run along roads and between buildings, as well as randomly in open fields.
   b. A row of vegetation often hides a fence.
   c. Rocks, hills, and other terrain irregularities often remain invisible until just prior to touchdown.
   d. Inspect an unfamiliar landing area more closely at every 500-foot interval during descent and continuously below 500 feet.

6. Downwind landings are better than low turns:
   a. On calm days, unexpected wind shifts sometimes require jumpers to land with a light wind, instead of against it.
   b. On windy days, jumpers sometimes fly downwind too long and run out of time to complete a turn into the wind, also requiring them to land with the wind.
   c. When faced with deciding between a low turn and a downwind landing, the downwind landing is the correct decision.
   d. When making a downwind landing:
      (1) Flare at the normal altitude, regardless of ground speed.
      (2) Roll on landing, using the PLF hard-landing procedure.
      (3) Tripping when trying to run out a high-speed landing can result in serious neck injury or death.
7. Planning a landing pattern (intended landing area or alternate) for smooth flow and separation of traffic (See Illustration C.6 below.):
   
   a. Jumpers on left-hand (left-turning) approaches should land on the left side of the landing area; jumpers on right-hand approaches should land on the right side of the landing area to prevent conflicts.
   
   b. The turn from base leg to final is the most hazardous because of opposite approaching traffic.
   
   c. Look and avoid.

Illustration C.6 - Jumpers flying a right-hand pattern should land on the right side of the field; jumpers flying a left-hand pattern should land on the left side of the field.

8. When to attempt a stand-up landing (all must be met, otherwise perform a Parachute-Landing Fall):
   
   a. When you are in control of all the variables (i.e. you flew the planned pattern and landed directly into the wind onto the planned target with a level wing and a fully functioning main parachute).
   
   b. After a good full flare at the appropriate altitude (when your feet are about 10’ above the ground).
   
   c. Only if you touch down softly and you are confident that you can comfortably remain on your feet.
Category C Quiz
(Must be passed before Category C-1 jump.)

1. In flat and stable free-fall at terminal velocity, how long does it take an average jumper to fall 1,000 feet?
   a) 4.5 seconds
   b) 5.5 seconds
   c) 6.0 seconds

2. What is the correct procedure for recovering from instability to the belly-to-earth position?
   a) Be more aggressive in your body position.
   b) Altitude, arch, legs, relax.
   c) De-arch, relax.

3. Which is better, to pull at the planned altitude or to fall lower to get stable before pulling?
   a) Always be stable before pulling.
   b) Pull above the planned altitude if you know you will not be stable.
   c) Pull at the planned altitude, regardless of stability.

4. What is the purpose of the wave-off before deployment?
   a) To signal other jumpers
   b) To get stable before pulling
   c) To relax in preparation for deployment

5. What is the purpose of the parachute landing fall (PLF), & why is it important for skydivers?
   a) PLF allows skydivers to land in any location safely
   b) It protects against hard landings, and all skydivers have hard landings.
   c) It helps protect your gear.

6. What part of the landing pattern is most dangerous to skydivers?
   a) The intersection of the base and final approach legs
   b) The last 20 feet of the landing leg
   c) Entry into the downwind leg

7. How do higher wind speeds affect the planned landing pattern as compared to the pattern plan for a calm day?
   a) Lengthens the final approach, shortens the base leg, lengthens the downwind leg, and places the planned pattern entry point farther upwind.
   b) Shortens the final approach, shortens the base leg, lengthens the downwind leg, and places the planned pattern entry point farther upwind.
   c) Shortens the final approach, lengthens the base leg, lengthens the downwind leg, and places the planned pattern entry point farther downwind.

8. In moderately strong winds, how far downwind of an obstacle might you find turbulence?
   a) 1-3 times the height of the obstacle.
   b) 5-10 times the height of the obstacle.
   c) 10-20 times the height of the obstacle.

9. What is the best procedure to use when flying your canopy in turbulent conditions?
   a) Fly your canopy at half-brakes.
   b) Keep the canopy flying in a straight line at full flight (or as directed by the owner’s manual).
   c) Fly in a zigzag pattern at full flight (or as directed by the owner’s manual).
10. Why is it important to protect your parachute system operation handles when in and around the aircraft?
   a) Keeps them in place and prevents accidental or premature deployment
   b) Protects them from corrosive aircraft exhaust
   c) Reinforces muscle memory of handle locations

11. What is the equipment pre-flight strategy to use before putting on your gear?
   a) Metal parts first, fabric second, plastic third
   b) Top to bottom, back to front
   c) Manifest check, instructor check, pilot check

12. How does the three-ring main canopy release system disconnect the main parachute from the harness?
   a) Cuts the risers
   b) Pulls the cables to release the cloth loop
   c) Pulls the cables to release the reserve closing-pin

13. How do you know if a reserve parachute has been packed by an FAA rigger within the last 180 days?
   a) Rigger’s packing seal on the reserve ripcord.
   b) Information found on the reserve packing data card.
   c) Drop zone administrative records.

14. How do you know the reserve container has not been opened since the FAA rigger last closed it?
   a) Rigger’s packing seal on the reserve ripcord.
   b) Information found on the reserve packing data card.
   c) Drop zone administrative records.

15. If the surface winds are blowing from west to east, which direction will you face to fly the downwind leg of the landing pattern instructor’s illustration?
   a) West
   b) East
   c) North

16. How is wing loading calculated?
   a) Divide the exit weight by the square footage.
   b) Divide the square footage by the exit weight.
   c) Divide the jumper’s weight by the square footage.

17. Which canopy size (same model design) will exhibit quicker control response?
   a) 210-square feet with a 210-pound jumper (geared up).
   b) 190-square feet with a 190-pound jumper (geared up).
   c) 170 square feet with a 170-pound jumper (geared up).

18. When is it OK to attempt a stand-up landing?
   a) When the winds are between 5-10 mph
   b) When the jumper has control of all the variables and has executed a good flare at the appropriate altitude
   c) When the parachute is open, square, steerable, and able to be landed
Category C Dive Flows

Two AFF Instructors on C-1. One AFF Instructor on C-2.

**C-1 Freefall Dive Flow**
- Exit in a relaxed arch with two gripped instructors.
- Perform the first full Circle of Awareness.
- Three smooth practice touches without assistance.
- Perform the second full Circle of Awareness.
- Perform two toe taps.
- Instructors release grips as situation allows.
- Short Circles of Awareness every 3-5 seconds.
  (Altitude, Arch, Legs, Relax, Correct Turn if needed)
- Instructors make sure of student control by 6,000 feet and regrip through deployment.
- Lock on to altimeter at 6,000 feet.
- Wave-off at 5,500 feet and deploy by 5,000 feet without instructor contact or prompting to pass.

**Canopy Dive Flow**
(Same for both Category C jumps.)
- Check altitude within three seconds of deploying.
- Assess the canopy by asking, “Is it there? Is it square? Is it stable and steerable?”
- Correct any common canopy problems by 2,500’.
- Unstow the toggles from half brakes by pulling them down to your groin & letting them back up.
- Check altitude.
- Full flare for five seconds.
- Smoothly let toggles all the way back up to return the canopy to full flight.
- Check altitude
- Look left and turn left at least 90°.
- Check altitude.
- Look right and turn right at least 90°.
- Check altitude.
- Full flare for five seconds.
- Smoothly let toggles all the way back up to return the canopy to full flight.
- Check altitude
- Steer over correct portion of flight path until 1,000 feet.
- Look for obstacles around the landing area.
- Follow pre-assigned pattern over the planned or alternate landing area.
- Prepare to PLF once on final at 300 feet.
- Begin to flare quickly to half brakes at ten feet.
- Finish flare to groin just before the balls of your feet touch the ground.

**C-2 Freefall Dive Flow**
- Exit in a relaxed arch with one gripped instructor.
- Perform the first full Circle of Awareness.
- Three smooth practice touches without assistance.
- Perform the second full Circle of Awareness.
- Perform two toe taps.
- Instructor releases grips as situation allows.
- Short Circles of Awareness every 3-5 seconds.
  (Altitude, Arch, Legs, Relax, Correct Turn if needed)
- Instructor makes sure of student control by 6,000 feet & regrips through deployment only if needed.
- Lock on to altimeter at 6,000 feet.
- Wave-off at 5,500 feet and deploy by 5,000 feet without instructor contact or prompting to pass.

**Canopy Dive Flow**
(Same for both Category C jumps.)
- Check altitude within three seconds of deploying.
- Assess the canopy by asking, “Is it there? Is it square? Is it stable and steerable?”
- Correct any common canopy problems by 2,500’.
- Unstow the toggles from half brakes by pulling them down to your groin & letting them back up.
- Check altitude.
- Full flare for five seconds.
- Smoothly let toggles all the way back up to return the canopy to full flight.
- Check altitude
- Look left and turn left at least 90°.
- Check altitude.
- Look right and turn right at least 90°.
- Check altitude.
- Full flare for five seconds.
- Smoothly let toggles all the way back up to return the canopy to full flight.
- Check altitude
- Steer over correct portion of flight path until 1,000 feet.
- Look for obstacles around the landing area.
- Follow pre-assigned pattern over the planned or alternate landing area.
- Prepare to PLF once on final at 300 feet.
- Begin to flare quickly to half brakes at ten feet.
- Finish flare to groin just before the balls of your feet touch the ground.

**Advancement Criteria**

**Exit and Freefall**
- Demonstrate the ability to freefall safely with one AFF Instructor
- Stable deployment without instructor contact
- Control within five seconds of exit
- Stable, relaxed freefall
- Ability to dampen turns & heading drift using “altitude, arch, legs, relax, correct turn”
- Wave-off and pull at the assigned altitude

**Canopy**
- Fly a recognizable pattern with minimal assistance
- Flare with minimal assistance

**Spotting and Aircraft**
- Understanding of how to plan and adjust the landing pattern for wind speed and direction
Visualization: Mind over Body

Did you know that done properly, visualizing what you are about to do can be as effective as practicing it for real? Studies show that the only part of an athlete’s performance that visualization will not help is gaining the strength necessary to perform the task.

Exercise is hard and skydiving is expensive, but visualization is cheap and easy. To begin, go where you can relax and where distractions will not affect you. (Potential distractions may be all around, but you can train your mind to tune them out.) Breathe rhythmically, slowly and recall or imagine a pleasant experience or moment where you are calm and very comfortable.

Then, imagine your upcoming performance exactly as you want it to occur. Start from the beginning, which includes moving to the door of the aircraft and imagine your actions through to the end. You should even visualize your descent under canopy.

Visualize every detail: where you will place your hands and feet in the door, the cold air rushing in, the noise of the plane, the clean smell of the air, the feel of the aircraft metal on your hands, and everything you can associate with the upcoming experience.

Imagine how you will move every part of your body during the count and exit and how you will feel as you fly away from the plane. Think of where you will position your hands, feet, head, and torso, particularly as you explore techniques for maneuvering in freefall. Visualize every move, including looking at the ground, checking your altimeter, and seeing your instructors.

Some athletes visualize the upcoming performance from their point of view, while others visualize as if they were watching themselves on TV from above or alongside.

Visualize in slow motion or real time, but no faster. See your performance as one continuous flowing action, rather than as snapshots. As you visualize your actions, associate the motions by feigning the small movements with your hands or your legs with each action (“twitch”) as you mentally rehearse the performance.

Leave yourself a few minutes to take in the sights and sounds on the way to altitude, but keep your performance first on your mind. The jumpers who succeed best all practice their routines on the climb to altitude, so you should not feel out of place. Just look around at the others doing the same thing!

At this stage of your training, your performance requires as much of your attention as any skydiver training for competition. Use these same visualization tips that help top athletes in skydiving and other sports to help you improve your performance and increase your overall satisfaction from each jump.
Category D
Two Jumps

By now, you have learned to safely control freefall by keeping track of your altitude, focusing on a neutral body position—especially your hips and legs and relaxing. In Category D, you will learn to control heading by modifying the neutral position using your upper body to deflect air. You will need to demonstrate relatively effortless control of 90°, 180°, and 360° freefall turns before moving on to aerobatics, introduced in Category E. Under canopy, you will explore rear riser control, which opens new safety options and adds fun to the canopy ride. Before advancing, you should demonstrate the ability to return to the drop zone and steer a planned, recognizable landing pattern without assistance. To progress to Category E, you should also be able to flare and land with minimal assistance by now. You should be able to stand up on landing by the end of this category. In Category C, you observed your instructor prepare and inspect your gear for the jump. Now, it is your turn. In Category D, you will begin studying skydiving equipment in earnest to become responsible for your own pre-flight equipment checks. You will review the owner's manual for the automatic activation device and learn how to operate one. The USPA Instructor introduces some of the elements of spotting, which means choosing the correct exit point and guiding the pilot to it. You will observe jump-run operations from the door. Study assignments include the FAA requirements for cloud clearance and visibility, which you will need to memorize.

Learning and Performance Objectives

- Solo, unassisted exit
- Freefall turns
- Freefall speeds and times (review)
- Rear riser control
- Building landing review
- AAD (owner's manual)
- Pre-jump equipment check
- Introduction to three-ring release operation
- Cloud clearance and visibility
- Observe jump run

Rules and Recommendations

Cloud clearance and visibility requirements for skydivers (FAR 105.17)

1. The pilot and jumper are jointly responsible for complying with the flight visibility and cloud clearance requirements of FAR Section 105.17. Aircraft flight under visual flight rules (VFR) conditions and persons making parachute jumps require minimum clearance from clouds and minimum visibility depending upon the altitude at which the activity is taking place:

   a. For activities that are at or above 10,000 feet MSL, the required minimum distance from clouds is 1,000 feet under, 1,000 feet over, and one mile horizontally from clouds. Flight visibility must be at least five miles.

   b. For activities that are at more than 1,200 feet above the surface but less than 10,000 feet MSL, the required minimum distance from clouds is 500 feet under, 1,000 feet over, and 2,000 feet horizontally from clouds. Flight visibility must be at least three miles.

2. No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft:

   a. Into or through a cloud, or

   b. When the flight visibility or the distance from any cloud is less than that prescribed above.
3. Read and memorize the cloud clearance and visibility table and illustration below:

![Illustration D.1](image)

<table>
<thead>
<tr>
<th>Altitude</th>
<th>Flight Visibility</th>
<th>Distance from Clouds</th>
</tr>
</thead>
<tbody>
<tr>
<td>at or above 10,000 feet MSL</td>
<td>1,200 feet or less above the surface regardless of the MSL altitude</td>
<td>500 feet below 1,000 feet above 2,000 feet horizontal</td>
</tr>
<tr>
<td>below 10,000 feet MSL</td>
<td>More than 1,200 feet above the surface but less than 10,000 feet MSL</td>
<td>500 feet below 1,000 feet above 2,000 feet horizontal</td>
</tr>
</tbody>
</table>

Illustration D.1 - Jumpers must observe the FAA requirements for visibility and clearance from clouds (FAR 105.17) to avoid other aircraft flying over the drop zone.

**USPA requires that all student jump operations be completed prior to sunset**
All student jumps, including tandems, must be completed between official sunrise & sunset. (BSR 2-1.F.9)

**Equipment**

1. Automatic activation device operation:
   a. The instructor or a rigger explains the basics of how to operate the AAD.
   b. Every jumper should read and understand the information contained in the AAD owner's manual.
   c. An AAD initiates the reserve deployment sequence at a pre-set altitude.
   d. An AAD is encouraged for all licensed jumpers.
   e. The use of an AAD for activation of the reserve parachute, coupled with proper training in its use, has been shown to significantly increase the chances of surviving a malfunction or loss of altitude awareness.
   f. The AAD is used to back up the jumper's deployment and emergency procedures, but no jumper should ever rely on one.
   g. The FAA requires that if an AAD is installed, it must be maintained in accordance with the manufacturer's instructions (FAR 105.43.c).
   h. An AAD may complicate certain situations, particularly if the jumper deploys the main parachute low enough for the AAD to activate.
   i. Understanding and reviewing of the emergency procedures for Two Canopies Out is essential.
2. Checking assembly of the three-ring release system:
   (Note: Disassembly and maintenance of the three-ring release system is covered in Category H.)
   a. Each ring passes through only one other ring.
   b. The white retaining loop passes through only the topmost, smallest ring.
   c. The white retaining loop passes through the cable housing terminal end.
   d. The release cable passes through the white retaining loop.
   e. The retaining loop is undamaged.
   f. The release cable is free of nicks, kinks, and burrs (especially on the end).

3. Pre-jump equipment checks:
   (Note: The instructor should guide you through a complete pre-flight equipment check using a checklist.)
   a. Before each jump, check your equipment before putting it on.
   b. With the help of another jumper, get a complete gear check with all your gear on before boarding.
   c. Get your equipment checked once again before exiting the aircraft:
      (1) "Check of threes" (jumper self-check)
         (a) Three-ring assembly (and reserve static line)
         (b) Three points of harness attachment for correct routing, assembly, and adjustment
         (c) Three operation handles--main activation, cutaway and reserve
      (2) Pin check back of system (by another jumper) top to bottom:
         (a) Reserve pin in place (and automatic activation device on and set to correct mode)
         (b) Main pin in place
         (c) Ripcord cable movement or correct bridle routing
         (d) Activation handle in place
      (3) Personal equipment check ("SHAGG"):
         (a) Shoes: tied, no hooks
         (b) Helmet: fit and adjustment
         (c) Altimeter: set for zero
         (d) Goggles: tight and clean
         (e) Gloves: lightweight and proper size (only if below 40° at jump altitude)

4. Jumpsuit or clothes:
   a. Access to handles: shirt tails, jackets, and sweatshirts tucked in, pockets zipped closed
   b. Protection on landing
   c. Provide correct fall rate

**Aircraft and Spotting**

1. Instructor-assisted planning with the landing pattern for the day's conditions.

2. Overview of aircraft spotting and jump-run procedures (what "spotting" means):
   (Note: It is recommended that a jump pilot explain spotting procedures in Category E.)
   a. Determining the best opening point:
      (1) Calculations from wind forecasts
      (2) Observation and discussion of previous jumpers' canopy descents
   b. Pre-flight briefing with the pilot to discuss the correct jump run and exit points
   c. Guiding the pilot on jump run
   d. Verifying that the area below is clear of clouds and other aircraft before jumping

3. During jump run, observe spotting procedures and demonstrate the technique for looking straight down from the aircraft:
   a. Sight from the horizon looking forward
   b. Sight from the horizon looking abreast
   c. The junction of the two perpendicular lines from horizon marks the point straight below aircraft.

4. You must get your head completely outside the aircraft to look effectively for other aircraft and clouds.
Exit and Freefall

1. Poised exit without assistance:
   a. Use the same climb out, set-up, launch, and flyaway procedure as on previous exits.
   b. Prepare for slightly different results without an instructor gripping the harness on exit.
   c. A.I.R.: Provided you are Altitude aware, In control, and Relaxed (AIR), you may continue in freefall and deploy at the assigned altitude.
   d. Five-Second Rule: If you are above your assigned deployment altitude but cannot control your freefall (spinning rapidly or tumbling) for more than five seconds, deploy your main canopy immediately. Deploy your main canopy at the assigned deployment altitude regardless of stability.
   e. Roll-Out-of-Bed (ROB) Technique: If you are above your assigned deployment altitude and falling in a back-to-earth orientation, roll to one side to recover to a stable, belly-to-earth body position. Check altitude, arch, look towards the ground to the right, bring the right arm in across your chest, as your body rolls to the right and you are facing the ground bring your right arm back to the freefall position. Check altitude.
   f. Review short Circles of Awareness (altitude, arch, legs, relax, and correct turn if needed):
      (1) Know the altitude by reading the altimeter or counting from exit (depending on exit altitude).
      (2) Arch at the hips to improve belly-to-wind stability.
      (3) Check your leg position and adjust as needed (probably extend to 45 degrees).
      (4) Relax by taking a breath and letting go of unwanted body tension.
      (5) Recognize heading changes and actively correct as jump continues.
   g. Exit without assistance and establish control within five seconds before advancing from Category D.

2. Initiating freefall turns:
   a. First, establish a comfortable, relaxed, neutral body position.
   b. Find a point ahead on the horizon as a primary heading reference.
   c. Initiate a turn by changing the level of your upper arms to deflect air to one side; the forearms should follow.
   d. Assist the turn's effectiveness by extending both legs slightly to counter the effects of tension in the upper body.
   e. Any deviation from the neutral position (as when initiating a turn) demands more effort to maintain the rest of the body in neutral.
   f. Maintain leg pressure and arch for a smooth turn.
   g. Stop small turns (90 degrees or less) by returning to the neutral body position.
   h. Stop larger turns (180 and 360 degrees) using the "start-coast-stop" principle.
      (1) Start the turn using the turn position for the first half of turn.
      (2) Return to neutral when original heading comes into view.
      (3) Counter the turn if necessary to stop on heading.
   i. To regain lost control: altitude, arch, legs, relax (neutral position), pick a new heading to maintain.
   j. Stop all maneuvers at 6,000 feet and maintain a stable arch on heading with positive leg pressure through wave-off and deployment.

3. Calculating freefall time according to exit altitude based on average terminal velocity of 120 mph:
   a. Ten seconds for the first 1,000 feet
   b. 5.5 seconds for each additional 1,000 feet (round down to five seconds for an added safety margin)
   c. Example: jump from 5,000 feet with a planned deployment altitude of 3,000 feet
      (1) Allow ten seconds from 5,000 to 4,000 feet
      (2) Add five seconds from 4,000 to 3,000 feet
      (3) Plan a total of 15 seconds for freefall
Emergency Procedure Review

1. Study and review all possible equipment malfunctions in a training harness:
   a. Recognition and decision-making ability for good or bad canopy:
      (1) Review sample problems not requiring a cutaway and practice the procedures.
      (2) Review premature deployment.
      (3) Review sample malfunctions requiring a cutaway and practice the procedures.
   b. Procedures for testing a questionable canopy above cutaway altitude:
      (1) Make two tries to clear the problem with toggles or back risers if altitude permits.
      (2) The canopy must fly straight, turn, and flare reliably to be able to land safely.
      (3) Decide to cut away or land the canopy by 2,500 feet and act.

2. Procedures for landing on a building:
   a. Plan your landing approach to be well clear of objects.
   b. Fly far enough from objects that another jumper or your own misjudgment does not force you into
      a building or other hazardous object.
   c. Focus on clear, open landing areas and steer the parachute to a clear area.
   d. Make any low-altitude avoidance turns from braked flight to avoid an equally dangerous dive
      following a turn from full flight.
   e. If a building is unavoidable, press feet and knees together and prepare for a PLF to absorb impact.
   f. If possible, disconnect the RSL before landing on a building.
   g. At ten feet above the first point of contact with the building, flare to at least half brakes.
   h. Strike the building feet first, whether landing on top or into the side of the building.
   i. After landing on top of a building in windy conditions:
      (1) Disconnect the reserve static line (if possible).
      (2) Cutaway the main parachute canopy to avoid being pulled off roof.
      (3) If landing with a reserve, retrieve and contain the canopy until removing the harness.
   j. Wait for competent help and assistance.

Canopy

1. Rear riser steering:
   a. Steer using the rear risers with the brakes still set to change heading quickly after opening:
      (1) With the brakes set, the canopy has less forward momentum to overcome for a turn.
      (2) The rear risers operate more than the entire back quarter of canopy.
   b. Using risers to steer in case of a malfunctioned toggle:
      (You must discuss this section with your instructor.)
      (1) Release both brakes.
      (2) You need to conserve enough strength to complete all turns with rear risers until landing and
          still be able to flare.
      (3) Especially on a smaller canopy, you should practice riser flares many times above 1,000 feet on
          a routine jump before committing to a riser landing (important).
      (4) Your plan to land or cut away in the event of a malfunctioned toggle should be made before you
          ever encounter the problem.
      (5) One locked brake with the other released may necessitate a cutaway; decide and act by 2,500’.
   c. Practice all riser maneuvers above 1,000’ & focus on the canopy pattern & traffic from 1,000’ down
   d. Before making any turns, look in the direction of the turn to prevent collisions and entanglements.

2. With minimal assistance, land within 165 feet of the target.
Category D Quiz
(Must be passed before Category D-1 jump.)

1. For planned deployment initiation at 3,000 feet, approximately how long should an averagesized jumper fall after exiting at 5,000 feet?
   a) 10 seconds  
   b) 15 seconds  
   c) 20 seconds

2. What is the most appropriate response to loss of heading control in freefall?
   a) Altitude, arch, legs, relax.  
   b) Correct by turning in opposite direction.  
   c) De-arch.

3. What is the best way to avoid a canopy collision when turning?
   a) Announce in a loud, clear voice your upcoming turns and/or maneuvers.  
   b) Always fly a right-hand pattern.  
   c) Look first in the direction of the turn.

4. What is the quickest and safest way to change heading immediately after opening?
   a) Aggressively use toggle inputs to turn.  
   b) Rear riser turn with the brakes still set.  
   c) Front riser turn with the brakes still set.

5. How would you steer a parachute that has a broken brake line?
   a) Immediately cut away and pull the reserve.  
   b) Use the back risers to steer with the brakes still set.  
   c) If familiar with rear-riser flares on that canopy, release both brakes and use the back risers to steer.

6. How would you prepare to land a canopy using the rear risers to flare?
   a) Practice with rear-riser flares at altitude with that canopy during a routine jump.  
   b) Prepare to PLF.  
   c) Set the brakes first, then land using rear risers.

7. What is the procedure for landing on a building?
   a) Cut away 5-10 feet above the building surface, prepare to PLF.  
   b) Disconnect the RSL (if time), contact the building feet first, PLF, cut away after landing on top of a building, wait for competent help.  
   c) Steer away from building so that you land on solid ground.

8. What is the purpose of the automatic activation device?
   a) To back up the jumper’s emergency procedures  
   b) To deploy the main canopy if the jumper is unable  
   c) To give the jumper more useable freefall time

9. What is the “check of threes”?
   a) Check with manifest to confirm your load number; check with your instructor to go over the dive flow; check with the pilot to confirm load.  
   b) Check three-ring release system for correct assembly & RSL; three points of harness attachment for correct routing, assembly, & adjustment; three operation handles-main activation, cutaway, reserve.  
   c) Altitude, arch, legs.
10. What must the spotter do to determine what is directly underneath the aircraft while on jump run?
   a) Maintain communication with flight control.
   b) Check GPS spot.
   c) Place head completely outside the aircraft and look straight down.

11. How far horizontally must jumpers be from any cloud below 10,000 feet MSL?
   a) 2,000 feet
   b) 3,000 feet
   c) one mile

12. How far horizontally must jumpers be from any cloud at 10,000 feet MSL and above?
   a) 2,000 feet
   b) 3,000 feet
   c) one mile

13. What are the minimum visibility requirements below 10,000 feet MSL?
   a) one mile
   b) three miles
   c) five miles

14. What are the minimum visibility requirements at 10,000 feet MSL and above?
   a) one mile
   b) three miles
   c) five miles

15. Who is responsible for a jumper observing cloud clearance requirements?
   a) Jumper and pilot
   b) Each jumper
   c) Safety and Training Advisor

16) According to the BSRs, what is the latest a student may jump?
   a) 9:00 PM (2100)
   b) All student jumps must be completed by sunset.
   c) All student jumps must be completed by thirty minutes after sunset.

17. What is the technique for determining the point straight below the aircraft during jump run?
   a) Determine two lines from the horizon, one ahead and one abreast, and find the intersection of those two lines.
   b) Look straight down and focus on the point that does not move.
   c) Determine two lines from the horizon, one ahead and one parallel, and find the intersection of those two lines.

18. What must the jumper look for below before exiting the aircraft?
   a) Previous groups of skydivers
   b) Clouds and other aircraft
   c) Both a and b
Category D Dive Flows
One AFF instructor

**D-1 Freefall Dive Flow**

- Observe spotting from the door.
- Exit in a relaxed arch (instructor gripped).
- Perform a full Circle of Awareness
- One smooth practice touch without assistance.
- Instructor releases grip and flies to front.
- Perform a short Circle of Awareness.
- Find a reference point on the horizon and determine the position of the instructor.
- Ask permission to turn (head nod).
- Start a turn, coast, and stop at 90°.
- Perform a short Circle of Awareness.
- With instructor’s permission each time, perform alternating left and right 90° turns while doing a short CoA in between each maneuver.
- Initiate no new turns below 6,000 feet.
- Finish final turn by 5,000 feet.
- Lock on to altimeter at 6,000 feet.
- Wave-off at 5,000 feet.
- Pull by 4,500 feet.

**D-2 Freefall Dive Flow**

- Observe spotting from the door.
- Solo poised exit in a relaxed arch.
- Perform a full Circle of Awareness.
- One smooth practice touch without assistance.
- Instructor flies to front
- Perform a short Circle of Awareness.
- With instructor’s permission each time, perform alternating left and right 90° turns while doing a short CoA in between each maneuver.
- Initiate no new turns below 6,000 feet.
- Finish final turn by 5,000 feet.
- Lock on to altimeter at 6,000 feet.
- Wave-off at 5,000 feet.
- Pull by 4,500 feet.

**D-1 Canopy Dive Flow**

- Correct common canopy problems (line twist, slider, end cells) using rears with brakes set.
- Look right and turn right 90° using rear risers.
- Check altitude, position, and traffic.
- Repeat to the left.
- Check altitude, position, and traffic.
- Release brakes, conduct controllability check, and fly to the holding area.
- Look right & turn right 90° using rear risers.
- Check altitude, position, and traffic.
- Repeat to the left.
- Look right & turn right 180° using rear risers.
- Check altitude, position, and traffic.
- Repeat to the left.
- Check altitude, position, and traffic.
- Practice rear riser flares.
- Return to normal controls by 2,000 feet.
- Verify landing pattern & adjust as necessary.
- Continue to stay in holding area until 1,000 feet.
- Follow planned pattern over landing area.
- Prepare to PLF and flare to land.

**D-2 Canopy Dive Flow**

- Correct common canopy problems (line twist, slider, end cells) using rears with brakes set.
- Look right and turn right 90° using rear risers.
- Check altitude, position, and traffic.
- Repeat to the left.
- Check altitude, position, and traffic.
- Release brakes, conduct controllability check, and fly to the holding area.
- Look right & turn right 180° using rear risers.
- Check altitude, position, and traffic.
- Repeat to the left.
- Check altitude, position, and traffic.
- Practice rear riser flares.
- Return to normal controls by 2,000 feet.
- Verify landing pattern & adjust as necessary.
- Continue to stay in holding area until 1,000 feet.
- Follow planned pattern over the planned landing area or alternate.
- Prepare to PLF and flare to land.

*Note: Your hands should go to the rear risers after opening on every jump for collision avoidance. You can flare your parachute to land with the rear risers in situations where your toggle(s) are rendered useless.*
Advancement Criteria

Spotting and Aircraft
- Recognize and observe the airport and the spot from the aircraft door during jump run

Equipment
- Operate the AAD

Exit and Freefall
- Stability within five seconds after an unassisted poised exit
- Cumulative of four 90° turns, within 20°
- Cumulative 2 180° & 2 360° turns, within 45°

Canopy
- Cumulative two 90° rear riser turns with brakes set
- Cumulative two 90° rear riser turns with brakes released
- One 180-degree rear riser turn, and one 360-degree rear riser turn with brakes released
- Two rear riser flares above 1,000 feet
- Stand-up landing
- Landing within 165 feet of the target with minimal assistance

HAVE YOU JOINED USPA?

The United States Parachute Association represents and works for skydivers like you. USPA maintains FAA-recognized skydiving training, licensing, and rating programs, sanctions competitions and much more.

As a USPA member, you receive third-party personal liability and property damage skydiving insurance coverage.

Maintaining a strong association of skydivers requires your participation. Please join at your local drop zone, on line at www.uspa.org, or call (540) 604-9740.
Learning How to Spot, One Jump at a Time

Before earning a USPA A-License, you are expected to learn to spot in routine conditions. “Spotting” simply means choosing the opening point and guiding the pilot to the correct position over the ground for exit. You can calculate the spot from a winds-aloft report. FAA Flight Service provides these reports, which you can get from the pilot. StartSkydiving.com posts these reports outside of manifest daily.

When you are in the door before exit, spotting starts with determining exactly what is straight down and how the plane is moving across the ground. A good spotter’s training never ends.

Here are some tips for beginners:

1. **Be familiar with the DZ and surrounding area**, including the correct exit and opening points for the day’s conditions. The USPA Instructor will simply tell you at first and then show you how to figure it for yourself later.

2. **Look out of the aircraft**, obviously done best with the door open and your head all the way outside. Small aircraft give you more opportunities to practice spotting. In larger aircraft, your instructor will arrange some door time. First, just get comfortable looking out. Put your head all the way out into the wind stream.

3. **Identify the DZ**, the climb out point, and the exit point from the open door of the aircraft. Point them out to your instructor or coach.

4. **Look straight down**, using horizon reference points. Avoid using the aircraft as a reference. On jump run, the plane is often climbing, banking, skidding, or crabbing.

5. **Determine the track of the aircraft**. Once you can identify two points straight below the plane on jump run, you know the actual path of the aircraft across the ground. If you see that it will take you too far to the left or right, suggest a correction to the one supervising your jump, who will relay your corrections to the pilot.

6. **Allow enough time** (distance) for your climb-out and set-up to separate you from other jumpers. Learn when to climb-out.

Soon, you will give directions to the pilot under supervision. After a while, the USPA Instructor or Coach will not interfere unless your spotting appears unsafe.

Your spotting training will require several jumps, and the staff will log your progress. Spot as often as you can during your training as a student so you will feel confident later when you are on your own.
Category E
Three jumps

This is the last category that distinguishes between students of different disciplines. Once you have demonstrated the ability to regain stability and control within five seconds after initiating a disorienting maneuver, a USPA AFF Instructor may clear you to jump without instructor supervision in freefall. At that point, any USPA Instructor may perform gripped exits with you, as well.

From Category E on, a USPA Instructor makes sure you are properly trained and supervised on each jump. In Category E, you practice unpoised (door) exits and aerobatics to increase your confidence, awareness, and control in freefall. By now, you should be jumping from the highest altitude available at your drop zone. Under canopy, you will practice for softer landings by looking for the "sweet spot" in the flare stroke that provides the best lift for that canopy. The goal is to flare your canopy to fly as flat as possible until you begin to touch down. The USPA Instructor will also remind you of your responsibility (and every jumper's responsibility) to observe and avoid other canopies.

By the end of Category D, you should have been able to land within 165 feet of the target with minimal assistance. In Category E, you should be able to do it on your own. Part of the emergency procedure review includes a detailed discussion on preventing premature openings in freefall and more detailed procedures for two open canopies. A rigger or USPA Instructor will introduce you to the open parachute system to identify its key components, along with the FAA's rules for packing parachutes. Supervised packing begins in Category F.

You will discuss weight, balance, airspeed, jump run procedures, and aircraft emergency procedures, usually with a jump pilot. A jump pilot or USPA Instructor also shows you how to read a winds-above report. From that information, you will learn to calculate the best opening point over the ground. In Categories E through H, you are expected to select and prepare your equipment for jumping (with the supervising USPA Instructor's advice), including obtaining all recommended pre-jump equipment checks. You are also learning to spot, where to sit in the aircraft, and to allow enough distance between the jumpers exiting before you. You should know the surface winds and plan the appropriate landing pattern.

In order to be cleared to student self-supervision by a USPA Instructor, you must have obtained the following skills and knowledge:

1. Demonstrated the ability to regain stability and control in freefall within five seconds after initiating a disorienting maneuver.
2. Demonstrated sufficient canopy control skills to land safely in all expected conditions.
3. Demonstrated the knowledge required to select and inspect gear before use.
4. Shown knowledge of spotting required to make reasonable judgment about suggested exit points.
5. Shown knowledge of both normal and emergency aircraft procedures for all aircraft types in common use for skydiving.

Learning and Performance Objectives

- Unpoised (door) exit
- Recovering stability and awareness
- Freefall aerobatics
- Canopy stalls
- The canopy’s "sweet spot"
- Two canopies deployed (review)
- High-wind landings
- Reserve static line
- Open parachute orientation
- Parachute packing and supervision
- Wind limits for students
- Aircraft briefing
- Aircraft emergency procedures
- Selecting the opening point
Rules and Recommendations

Review and discuss the USPA BSR 2-1.G on wind restrictions for students:

1. Students are limited to 14 mph (ten mph for round reserves).

2. A USPA Safety and Training Advisor may file a waiver for students to jump in higher winds.

3. There are no wind limitations for licensed skydivers. Licensed jumpers must exercise judgment.

Note: Start Skydiving is waivered to 16 mph for ram-air-canopies.

Read BSR 2-1.G and FAR 91.211.a.3 regarding oxygen requirements for jumps:

No person may operate a civil aircraft of U.S. registry at cabin pressure altitudes above:

1. 12,500 feet (MSL) up to and including 14,000 feet (MSL) unless the pilots and required minimum flight crew are provided with and use supplemental oxygen for that part of the flight at those altitudes that is of more than 30 minutes duration;

2. 14,000 feet (MSL) unless the pilots and required minimum flight crew are provided with and use supplemental oxygen during the entire flight time at those altitudes; and

3. 15,000’ MSL unless the operator provides each occupant of the aircraft with supplemental oxygen.

Review and discuss (preferably with an FAA rigger) the rules for the periodic inspection and repacking of the main and reserve parachute system published by the FAA in FAR Part 105.43.a and .b:

No person may conduct a parachute operation using a single-harness, dual-parachute system, and no pilot in command of an aircraft may allow any person to conduct a parachute operation from that aircraft using a single-harness, dual-parachute system, unless that system has at least one main parachute, one approved reserve parachute, and one approved single person harness and container that are packed as follows:

1. The main parachute must have been packed within 180 days before the date of its use by a certificated parachute rigger, a non-certificated person under the direct supervision of a certificated parachute rigger, or the person making the next jump with that parachute.

2. The reserve parachute must have been packed by a certificated parachute rigger:
   a. Within 180 days before the date of its use, if its canopy, shroud, and harness are composed exclusively of nylon, rayon, or similar synthetic fiber or material that is substantially resistant to damage from mold, mildew, and other fungi, and other rotting agents propagated in a moist environment or
   b. Within 60 days before the date of its use, if it is composed of any amount of silk, pongee, or other natural fiber, or material not specified above.

3. If installed, the automatic activation device must be maintained in accordance with manufacturer instructions for that automatic activation device.
Open Parachute Orientation

Attend the Category E Open Parachute Orientation (below) to prepare for packing lessons.

A rigger or USPA Instructor will introduce you to the parachute system when it is unpacked. You will learn the common points of parachute wear and maintenance requirements during Category G. Assembly and maintenance of the three-ring release is covered in Category H.

1. Packing is a function of identifying and organizing the parachute.

2. Identify:
   a. Pilot chute, bridle, and collapsing system
   b. Deployment bag or other device
   c. Pilot chute attachment
   d. Top skin and discuss the different characteristics of F-111 (0-3 cfm) and zero-P fabric.
   e. Packing tabs
   f. Bottom skin
   g. Leading edge (nose)
   h. Trailing edge (tail)
   i. Center of tail (warning label or tab)
   j. Stabilizers
   k. Manufacturer's label (to identify end cell)
   l. Slider stops
   m. Loaded and unloaded ribs
   n. Cross-ports
   o. A, B, C, D, and brake lines
   p. Line cascades, including brake lines
   q. Slider and slider grommets
   r. Connector links and link protectors
   s. Risers and brake system
Equipment

1. Typical characteristics of elliptical canopies, compared to rectangular canopies of the same size and material:
   a. Flatter glide for same airspeed
   b. Faster turns
   c. Greater loss of altitude in a turn
   d. May continue to dive after stopping control input following a turn
   e. Slower, less predictable opening (some models)
   f. Shorter toggle stroke for flare (some models)
   g. Quicker, more abrupt stall (some models)

2. The stall speed of any wing increases with higher wing loading:
   a. More suspended weight
   b. Sudden maneuvers, such as flaring hard after a dive

3. Read and discuss USPA recommendations on the use and limitations of the reserve static line, or RSL:
   a. A reserve static line attaches to a main canopy riser to extract the reserve ripcord pin immediately and automatically after separation of the main risers from the harness.
   b. An RSL is recommended for all experienced jumpers.
      (1) The RSL backs up the jumper by extracting the reserve ripcord pin after a cutaway.
      (2) The RSL:
         (a) must be routed and attached correctly to function
         (b) when misrouted, can complicate or prevent a cutaway
      (3) RSLs can complicate certain emergency procedures:
         (a) cutaway following a dual deployment
         (b) cutting away from an entanglement after a collision
         (c) unstable cutaway, although statistics show that chances are better from an unstable reserve deployment than delaying after a cutaway
         (d) unstable cutaway with a helmet camera or other protruding device
         (e) cutaway with a surfboard (although an RSL may have prevented two fatal skysurfing accidents)
         (f) cutaway on the ground in high winds
         (g) broken riser on the RSL side (results in reserve deployment); prevention:
            1. inspecting and replacing worn risers
            2. packing for soft openings (tight line stows; see manufacturer’s instructions)
            3. stable deployment at slow speeds
      (4) If temporarily disconnecting an RSL, care must be taken so it does not interfere with the operation of the parachute system, consult a rigger.
   c. When using a reserve static line device, the skydiver must not depend on the static line device and must manually pull the reserve ripcord immediately after the cutaway.
   d. An RSL may not be desirable when attempting linked canopy formations.
   e. Unless the manufacturer’s instructions state otherwise, a connector device between the left and right main risers should not be used.
Aircraft Briefing

Attend the following aircraft briefing presented by an experienced jump pilot or AFF instructor for Category E students outlined below that covers the interaction between the jumpers, the aircraft, and the pilots.

1. Sufficient airspeed is necessary for flight; without it, the aircraft wing stalls.

2. Weight
   a. Aircraft weight limits are specified in the aircraft owner’s manual and other documentation and, by law, may not be exceeded.
   b. Weight includes:
      (1) Fuel
      (2) Occupants
      (3) Skydiving equipment
      (4) Other (jump seats, oxygen systems, etc.)
   c. The weight must be calculated for each load.

3. Weight distribution (center of gravity)
   a. The load in an aircraft must be distributed within center of gravity limits to fly.
   b. Limits are published in the owner’s manual and other documentation.
   c. The pilot must calculate and monitor weight distribution for each flight.
   d. Jumpers moving around the aircraft can place the load out of limits.
      (1) In aircraft with a door in the rear, some jumpers must remain forward as groups congregate near the door.
      (2) Large groups planning to exit together should inform the pilot.

4. Seat belts must be worn when the aircraft is moving below 1,000’ including taxi, takeoff, & landing to:
   a. Prevent injuries in an emergency
   b. Maintain the load within the center-of-gravity limits

5. Jumpers outside the aircraft:
   a. Can block air flow to the control surfaces
   b. Add drag that makes it harder to maintain the necessary airspeed
   c. When floaters (outside the aircraft) are out, jumpers must exit quickly to reduce the effect of drag.

6. Apply the concept of weight, balance, and drag to aircraft at the DZ.

7. Review all possible aircraft emergency procedures. All students should take direction from his or her instructor(s) who will help prepare you for one of four actions:
   a. In an aircraft emergency below 1,500 feet, everyone must prepare to land with the aircraft:
      (1) The door must be closed and everyone must have his or her helmet and seatbelt on & fastened.
      (2) Assume the proper crash position and brace yourself for impact by bringing your knees to your chest and clasping your hands behind your head to reinforce your neck.
      (3) After the aircraft has come to a complete stop, immediately, yet orderly, locate the nearest exit and get out of the aircraft if you are able.
      (4) Do not touch anything as you exit the aircraft.
      (5) Walk at least 100 feet away from the aircraft.
      (6) Never go back to the aircraft for any reason.
      (7) Go get help if you are able.
   b. In an aircraft emergency above 1,500 feet, but below 3,500 feet:
      (1) Exit solo, giving at least three seconds between exits, count to three, and deploy your reserve.
   c. In an aircraft emergency above 3,500 feet, but below 5,500 feet:
      (1) Exit solo, giving at least three seconds between exits, count to three, and deploy your main.
   d. In an aircraft emergency above 5,500 feet:
      (1) Perform a routine exit with or without instructor assistance and deploy your main as planned.
   e. After an emergency exit and once under an open canopy:
      (1) Look for the instructor’s parachute and follow it to a clear, open landing area.
      (2) If you cannot find an instructor, follow any other experienced jumper or select any clear area.

8. Discuss the all of the different sections of FAR 91 provided in Section 9-1 of the Skydiver’s Information Manual; only the sections pertinent to skydiving are included there.
Spotting

(A pilot or an AFF instructor must cover this section with you.)

1. How to read a winds-aloft report
2. True versus magnetic heading
3. Jump-run procedures
4. Spotting corrections
   a. Manual (hand signals, shoulder taps)
   b. Electronic (spotting buttons and lights)
   c. Verbal
5. The effect of winds during canopy descent:
   a. A canopy descends at approximately 1,000 feet per minute.
   b. Divide the opening altitude by 1,000 feet to determine time of descent, e.g., 3,000 feet = three minutes of descent.
   c. Estimate in miles per minute the amount of drift during descent, as in Table E.1:

<table>
<thead>
<tr>
<th>MPH</th>
<th>Miles per Minute</th>
<th>Drift from 3,000 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>1</td>
<td>n/a</td>
</tr>
<tr>
<td>30</td>
<td>1/2</td>
<td>n/a</td>
</tr>
<tr>
<td>20</td>
<td>1/3</td>
<td>1 mile</td>
</tr>
<tr>
<td>15</td>
<td>1/4</td>
<td>3/4 mile</td>
</tr>
<tr>
<td>10</td>
<td>1/6</td>
<td>1/2 mile</td>
</tr>
<tr>
<td>5</td>
<td>1/12</td>
<td>1/4 mile</td>
</tr>
</tbody>
</table>

Table E.1 – Convert miles per hour to miles per minute and multiply times three minutes (approximately 1,000 feet of descent per minute) to estimate drift under canopy from 3,000 feet based on wind speed.

6. Calculate the drift under canopy from 3,000 feet, based on the average of the known winds and a canopy descent rate of 1,000 feet per minute, to choose the correct opening point. Example below:

Winds (forecast and observed):

<table>
<thead>
<tr>
<th>Altitude</th>
<th>Heading</th>
<th>Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000’ AGL</td>
<td>280</td>
<td>20</td>
</tr>
<tr>
<td>Surface</td>
<td>260</td>
<td>10</td>
</tr>
<tr>
<td>Average</td>
<td>270</td>
<td>15</td>
</tr>
</tbody>
</table>

Use Table E.1 above to estimate the canopy’s drift during a 3-minute descent in winds averaging 15 mph:

<table>
<thead>
<tr>
<th>Drift:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open: 3,000’ AGL</td>
</tr>
<tr>
<td>Time: 3 minutes (x ¼)</td>
</tr>
<tr>
<td>Distance: ¾ mi</td>
</tr>
<tr>
<td>Heading: from 270</td>
</tr>
</tbody>
</table>

Average the wind direction and velocity to estimate drift after opening at 3,000 feet above the ground.

a. Canopy descent time from 3,000 feet (at 1,000 feet per minute): three minutes
b. Total (uncontrolled) drift at 1/4 mile per minute: 3/4 mile
c. Ideal opening point: 3/4 mile due west
Alternate Method for Calculating Freefall and Canopy Drift

Example for Calculating Freefall Drift:

<table>
<thead>
<tr>
<th>Altitudes</th>
<th>Heading</th>
<th>Speed (in mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000 feet</td>
<td>250</td>
<td>15</td>
</tr>
<tr>
<td>6,000 feet</td>
<td>260</td>
<td>18</td>
</tr>
<tr>
<td>9,000 feet</td>
<td>270</td>
<td>20</td>
</tr>
<tr>
<td>12,000 feet</td>
<td>290</td>
<td>25</td>
</tr>
<tr>
<td>Average</td>
<td>270</td>
<td>19.5</td>
</tr>
</tbody>
</table>

To simplify the process, convert mph to mile per minute (mpm) (assuming a one-minute freefall)

\[
\frac{19.5 \text{ mph}}{60 \text{ min}} = 0.33 \text{ miles per minute}
\]

Freefall drift is equal to .33 miles at 270 degrees.

Example for Calculating Canopy Drift:

<table>
<thead>
<tr>
<th>Altitudes</th>
<th>Heading</th>
<th>Speed (in mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>180</td>
<td>12</td>
</tr>
<tr>
<td>3,000 feet</td>
<td>200</td>
<td>18</td>
</tr>
<tr>
<td>Average</td>
<td>190</td>
<td>15</td>
</tr>
</tbody>
</table>

\[
\frac{15 \text{ mph}}{60 \text{ min}} = 0.25 \text{ miles per minute}
\]

Assume 4,000 feet opening altitude (i.e. four minutes under canopy):

\[
0.25 \text{ miles x four minutes} = \text{one mile @ 190 degrees}
\]

7. Observe and ask jumpers on a previous load about the wind conditions and spot.

8. Jumper procedures during jump run
   a. The pilot determines when the door may be opened and may prefer to operate the door.
   b. Look below to:
      (1) Check for clouds
      (2) Check for aircraft
      (3) Verify the jump run is correct
   c. When the pilot gives the OK to jump (green light near door will illuminate), verify that the aircraft is the desired distance from the drop zone and begin exit procedures.

9. Be sure to establish communications for spotting corrections with the pilot prior to flight.
Exit and Freefall

1. Stable door (unpoised) exit:
   b. Present the front of your hips to the relative wind.
   c. Exit in a neutral position with your legs slightly extended (better stability).
   d. Maintain your arch as the relative wind changes from ahead to below after exit.

2. Recovering from exit and freefall instability:
   a. Altitude, arch, legs, relax, correct turn (review).
      (1) Know the altitude by reading the altimeter or counting from exit (depending on exit altitude).
      (2) Arch at the hips to improve belly-to-wind stability.
      (3) Check your leg position and adjust as needed (probably extend to 45 degrees).
      (4) Relax by taking a breath and letting go of unwanted body tension.
      (5) Recognize any heading drift and correct it to maintain heading.
   b. If you are above your assigned deployment altitude & falling stable in a back-to-earth orientation, roll to one side to recover to belly-to-earth. (half-barrel roll, aka roll-out-of-bed technique)
      (1) Check altitude.
      (2) Arch.
      (3) Look over that shoulder towards the ground to the right.
      (4) Briefly bring your right arm in across your chest.
      (5) As your body rolls to the right side and you recover, returning to facing the ground, bring your right arm back to the freefall position.
      (6) Check altitude.

3. Barrel rolls, back loops, and front loops (instructor's preferred technique):
   a. Try barrel rolls first, because they have a built-in recovery component from back-to-earth.
   b. Any two disorienting maneuvers with recovery and reorientation within five seconds qualify you for self-supervision in freefall (the same one may be used twice).
   c. Demonstrate full control by completing all three maneuvers within 60° of the initial heading.

4. Rolls, loops, and other free flying maneuvers result in faster and erratic fall rates; check altitude often.

Read and discuss USPA recommendations on altimeters in SIM Section 5-3.J

Visual altimeters, especially when chest-mounted, may be unreliable during inverted positions.

Some examples of altimeter types and locations include:

1. Visual altimeter worn on the wrist:
   a. Easy to read in a variety of freefall positions
   b. Wrist is usually unaffected by burbles
   c. Difficult to read while tracking

2. Visual altimeter worn on the chest or main lift web:
   a. Reference for others in a group, particularly when belly flying
   b. Readable during tracking
   c. Subject to error and erratic readings while back-to-earth

3. Audible altimeter, typically worn against the ear:
   a. Audible altimeters provide a good reference to key altitudes near the end of the planned freefall
   b. Extreme background noise of freefall and a jumper's attention to another event can render audible altimeters ineffective.
   c. Students should use audible altimeters only after demonstrating a satisfactory level of altitude awareness.
Emergency Procedure Review

1. Preventive measures for two open canopies:
   a. Deploy the main parachute at the correct altitude to avoid AAD activation.
   b. Initiate malfunction procedures high enough to cut away safely and avoid AAD activation.
   c. Maintain and correctly operate hand-deployed pilot chutes, especially collapsible pilot chutes.
   d. Protect your equipment before exit to prevent pins or handles being knocked loose.
   e. Some AADs, particularly those used for student jumping, will activate under a fully open parachute when controlled too aggressively at lower altitudes.

2. Various scenarios can result in having both parachutes deploy with one of the following outcomes. Review detailed procedures for two canopies out as they pertain to experienced jumpers found below.

   a. One canopy inflated and another deploying:
      (1) Attempt to contain the deploying reserve or main canopy and stuff it between your legs.
      (2) If the second canopy deployment is inevitable and there is sufficient altitude, disconnect the reserve static line and cut away the main.
      (3) If the second deployment is inevitable and there is insufficient altitude for a cutaway, wait for inflation of the second canopy and evaluate the result.
         (a) The two open canopies typically settle into one of three configurations, biplane, side-by-side, or downplane.
         (b) Trying to force one configuration into a more manageable configuration is typically futile and can be dangerous.

   b. Stable biplane:
      (1) Do NOT cutaway!
      (2) Unstow the brakes on the front canopy only and steer the front canopy gently using smooth toggle input. If you are unable to use the toggles, you may alternatively leave toggles stowed and gently steer the front canopy by smoothly pulling on its rear risers.
      (3) Leave the toggles stowed on the rear canopy.
      (4) Use minimal input to steer the front canopy only as necessary to maneuver for a safe landing.
      (5) Land both canopies without flaring.
      (6) Perform a parachute-landing fall (PLF) on landing.

   c. Stable side-by-side with directional control:
      (1) Release the brakes of the dominant canopy (larger and more directly overhead) and gently steer the dominant canopy using smooth toggle input. If you are unable to use the toggles, you may alternatively leave the toggles stowed and gently steer the dominant canopy by smoothly pulling on its rear risers.
      (2) Leave the toggles stowed on the less dominant canopy.
      (3) Use minimal control input to steer the canopy only as necessary to maneuver for a safe landing.
      (4) Land both canopies without flaring.
      (5) Perform a parachute-landing fall (PLF) on landing.

   d. Down-plane or pinwheel:
      (1) Disconnect the reserve static line (RSL) if altitude/time permits. (above 1,000 feet)
      (2) Immediately cut away the main canopy, regardless of altitude.
      (3) Steer the reserve to landing.
e. Main-reserve entanglement:

(1) Do NOT cutaway!
(2) Do everything possible to attempt to clear the entanglement of the two canopies by pulling on the risers and/or toggles of the canopy with the highest chance of inflating. Once one canopy is fully inflated, start trying to inflate the other canopy by pulling on the risers and/or toggles.
(3) NEVER give up!
(4) Perform a parachute-landing fall (PLF) on landing.

3. Procedures for high-wind landings:

a. Before landing, disconnect the RSL as a precaution in case a cutaway becomes necessary to prevent being dragged.

b. Choose a point to the side or well downwind of any obstacle that may generate turbulence.

c. Land using a PLF and pull one toggle in as quickly as possible until the canopy collapses.

d. After landing, cut away if necessary.

**Canopy**

1. Types of stalls:

a. An aerodynamic stall is a stable, steady-state stall, or sink, with decreased glide and increased rate of descent:
   (1) Associated with older designs and specialized accuracy canopies
   (2) May not be achievable with newer, flatter-gliding canopies, which often fly flatter almost until a full stall

b. A dynamic stall occurs at the end of a flare when the jumper begins to rock back under the canopy and the canopy begins to nose forward:
   (1) Associated with a sharp dive
   (2) May signal a full stall

c. A full stall occurs when the trailing edge (tail) is pulled below the leading edge (nose) and the canopy begins to fly backwards:
   (1) Collapses the canopy
   (2) May result in unrecoverable line twist in smaller, more highly loaded wings stall with the toggles (a rear riser stall may be more controllable)
   (3) May be contrary to the manufacturer’s recommendations
   (4) May result in entanglement with the jumper if released too abruptly
   (5) May result in injury if done too low

2. Raise the controls smoothly after any stall to avoid diving and partial collapse.

3. Proper flare technique:

a. Keep your feet and knees together to maintain heading during the landing flare (level harness).

b. Flare with the hands in front to provide visual feedback for level control.
4. Discovering the best landing flare ("sweet spot") for the canopy being jumped (nine practice flares):
   a. From full glide, flare to a mid-point in the toggle range:
      (1) Approximately the bottom of the rib cage
      (2) At a medium rate of flare
   b. Feel the amount and duration of lift before the stall.
   c. Return gently to full flight for at least ten seconds.
   d. Repeat to the same depth:
      (1) Once at a faster rate
      (2) Once at a slower rate
   e. Compare the strength and duration of the lift before the stall.
   f. Flare at three different speeds to a point deeper in the toggle stroke, approximately at the hips.
   g. Flare at three different speeds to a higher point in the toggle stroke, approximately the shoulders.
   h. Compare the flares to determine the stroke rate and depth that produces the maximum combined strength and duration of lift for that canopy.

5. Best flare height above the ground:
   a. Use the best flare procedure (discovered during the nine practice flares) upon landing, beginning one body height above ground.
   b. Flare to minimum descent (or flat) and hold that toggle position when the glide begins to flatten.
   c. Smoothly continue the toggle stroke to maintain the flat glide.
   d. If the canopy begins to stall and drops several feet, begin the flare that much lower next time.
   e. If you do not achieve the flattest glide before landing, begin to flare slightly higher next time.
   f. If you flare to high, never return your canopy to full flight. Raise your hands to waist height & PLF.

6. Review of traffic avoidance procedures:
   a. Watch for other traffic, especially upon entering the landing pattern.
   b. The most dangerous point of the pattern occurs when two jumpers on opposite base-leg approaches turn to final approach.
   c. The lower canopy has the right of way, but a jumper should not fly to assert right of way over it.
   d. It takes two people to have a collision, but only one to avoid it.
Category E Quiz
(Must be passed before Category E-1 jump.)

1. What happens to a jumper's fall rate when performing rolls, loops, or free-flying maneuvers?
   a) Increases
   b) Decreases
   c) Stays the same

2. What happens to a visual altimeter when it is in the jumper's burble?
   a) Reads unreliably
   b) Nothing
   c) Reads high

3. What is the best way to recover from a canopy stall to full glide?
   a) Quickly counteract with toggle input.
   b) Pull legs up into a tight ball.
   c) Smoothly raise the controls.

4. Describe an aerodynamic stall as it applies to a ram-air canopy;
   a) Sudden state of increased glide and increased rate of descent
   b) Stable state of decreased glide and increased rate of descent
   c) Stable state of increased glide and decreased rate of descent

5. When does a dynamic stall occur?
   a) When the front risers are pulled down quickly
   b) At the end of a flare when the jumper begins to rock back under the canopy
   c) At the beginning of a flare

6. What happens after a dynamic stall if the tail is held lower than the nose?
   a) Recovery
   b) Continued dynamic stall
   c) Full stall

7. What is the best way to determine a canopy's optimum flare speed and depth for landing?
   a) Practice different rates of flare entry at different depths of flare.
   b) Divide exit weight by the canopy's square footage.
   c) Contact the manufacturer.

8. Describe your procedure for landing in high winds:
   a) Stay well downwind of any obstacle, face into the wind early, disconnect the RSL, land with a PLF, pull one toggle down completely, and after landing, cut away if necessary.
   b) Do not attempt a stand-up landing; PLF
   c) Enter downwind leg at 3/4 brakes and smoothly continue to full brakes.

9. How many A-lines does a nine-cell canopy have?
   a) Nine
   b) Ten
   c) Eleven

10. To what part of the canopy do the steering lines (brake lines) connect?
    a) Nose or leading edge
    b) End cells
    c) Tail or trailing edge
11. What lines go through the rear slider grommets?
   a) A, B, and C
   b) C, D, and brakes
   c) A, C, and D

12. Where does the main pilot chute bridle attach to the canopy?
   a) Rear center
   b) Top center
   c) Front center

13. Who may pack a main parachute?
   a) FAA rigger, person jumping the parachute, person under rigger's supervision
   b) Drop zone certified packer, FAA rigger
   c) Anyone

14. How often do the main and reserve parachute need to be packed?
   a) Every 120 days
   b) Every 180 days
   c) Every 90 days

15. Who is in command of the aircraft?
   a) FAA
   b) TSA
   c) Pilot

16. What are two purposes for wearing seat belts in an aircraft?
   a) To conform to federal regulations and protection in a crash
   b) To prevent items from getting loose and maintain the correct balance
   c) To maintain the correct balance and protection in a crash

17. Who is responsible for determining if the aircraft is in condition for safe flight?
   a) The aircraft owner
   b) The pilot
   c) FAA

18. Above what altitude MSL is the pilot of an unpressurized aircraft required to breathe supplemental oxygen?
   a) 14,000 feet
   b) 15,000 feet
   c) 18,000 feet

19. Above what altitude MSL are all occupants of an unpressurized aircraft required to be provided with supplemental oxygen?
   a) 14,000 feet
   b) 15,000 feet
   c) 18,000 feet

20. In an aircraft with the exit door near the back, what must jumpers do to maintain the balance during exit procedures?
   a) Remain forward until it is time for their group to exit.
   b) Follow the pilot's instructions on each jump.
   c) Remain as close to the pilot as possible.
21. What is the biggest danger to a jumper when flying the canopy pattern?
   a) Other canopies
   b) Turbulent wind
   c) Canopy malfunction

22. What is the best way to avoid a canopy collision?
   a) See and remain clear of other jumpers.
   b) Spiral quickly so that you are the first jumper landing.
   c) Stay in brakes so that you are the last jumper landing.

23. How does the RSL work?
   a) Activates a small explosion that cuts the reserve closing-loop
   b) Prevents main canopy from being cutaway
   c) Forms a separable link between the main riser and reserve ripcord so that cutting away the main activates the reserve, if the RSL is hooked up

24. What would happen if the main riser attached to the RSL breaks?
   a) The reserve deploys into the main.
   b) The reserve deploys with the main still attached by the other riser.
   c) The main remains attached, creating a two-out situation.

25. What is the best way to prevent risers from breaking?
   a) Inspection and maintenance; correct packing, tight line stowage, and stable deployment.
   b) Replace risers every year.
   c) Remind your rigger to inspect at every reserve inspection and repack.

26. What is one way to prevent a dual deployment?
   a) Initiate malfunction procedures high enough to cut away safely and avoid AAD activation.
   b) Deploy the main parachute at or above the AAD activation altitude.
   c) De-activate AAD under canopy above AAD activation altitude.

27. What is generally the best action to take in the following two-canopy-out: Biplane?
   a) Release the RSL (if time) and cut away.
   b) Release the brakes on the dominant canopy only and steer that canopy gently; or release the RSL (if time) and cut away; PLF.
   c) Release the brakes on the front canopy only and steer that canopy gently; PLF.

28. What is generally the best action to take in the following two-canopy-out: Side-by-side?
   a) Release the RSL (if time) and cut away.
   b) Release the brakes on the dominant canopy only and steer that canopy gently; or release the RSL (if time) and cut away; PLF.
   c) Release the brakes on the front canopy only and steer that canopy gently; PLF.

29. What is generally the best action to take in the following two-canopy-out: Down-plane?
   a) Release the RSL (if time) and cut away.
   b) Release the brakes on the dominant canopy only and steer that canopy gently; or release the RSL (if time) and cut away; PLF.
   c) Release the brakes on the front canopy only and steer that canopy gently; PLF.
Category E Dive Flows
One AFF Instructor on E-1 and E-2. Self-supervised on E-3 with one coach on the plane.

**E-1 Freefall Dive Flow**
- Assist instructor with spotting.
- Stable, solo door (unpoised) exit.
- Find a reference point on the horizon and determine the position of the instructor.
- Perform a full Circle of Awareness.
- Ask permission to perform maneuvers (head nod).
- Receive reply from instructor (head nod).
- Perform a left barrel roll.
- Perform a short Circle of Awareness.
  (Altitude, Arch, Legs, Relax, Correct Turn if needed)
- Ask permission to perform maneuvers (head nod).
- Receive reply from instructor (head nod).
- Perform a right barrel roll.
- Perform a short CoA in between each barrel roll.
- With instructor’s permission each time, continue to perform barrel rolls until 6,000 feet.
- Initiate no new maneuvers below 6,000 feet.
- Complete final maneuver by 5,000 feet.
- Lock on at 5,000 feet (must be altitude aware).
- Wave-off at 4,500 feet (must do so to pass).
- Pull by 4,000 feet (must be stable to pass).

**E-2 Freefall Dive Flow**
- Assist instructor with spotting.
- Stable, solo door (unpoised) exit.
- Find a reference point on the horizon and determine the position of the instructor.
- Perform a full Circle of Awareness.
- Ask permission to perform maneuvers (head nod).
- Receive reply from instructor (head nod).
- Perform a back loop.
- Perform a short CoA in between each maneuver.
- With instructor’s permission each time, continue to perform the required aerobatics to meet the standards to pass until 6,000 feet.
- Initiate no new maneuvers below 6,000 feet.
- Complete final maneuver by 5,000 feet.
- Lock on at 5,000 feet (must be altitude aware).
- Wave-off at 4,500 feet (must do so to pass).
- Pull by 4,000 feet (must be stable to pass).

**E-3 Freefall Dive Flow**
- Perform a stable solo exit of your choice.
- Practice falling stable and performing turns with precision while maintaining correct body position and altitude awareness throughout the skydive.
- Solo student aerobatics are NOT permitted!
- Stop maneuvers by 6,000’. Lock on at 5,000’.
- Wave-off at 4,500’. Pull by 4,000’.

**Canopy Dive Flow**
(Same for all Category E jumps)
- Correct any common canopy problems.
- Release brakes, conduct a canopy controllability check, and move to the holding area.
- Check altitude, position, and traffic.
- Flare to chest at a medium speed and hold.
- Recover to full flight for ten seconds.
- Check altitude, position, and traffic.
- Flare to chest at a quicker speed and hold.
- Recover to full flight for ten seconds.
- Check altitude, position, and traffic.
- Flare to chest at a slower speed and hold.
- Recover to full flight for ten seconds.
- Check altitude, position, and traffic.
- Flare to hips at a medium speed and hold.
- Recover to full flight for ten seconds.
- Check altitude, position, and traffic.
- Flare to hips at a quicker speed and hold.
- Recover to full flight for ten seconds.
- Check altitude, position, and traffic.
- Flare to hips at a slower speed and hold.
- Recover to full flight for ten seconds.
- Check altitude, position, and traffic.
- Flare to shoulders at a medium speed and hold.
- Recover to full flight for ten seconds.
- Check altitude, position, and traffic.
- Flare to shoulders at a quicker speed and hold.
- Recover to full flight for ten seconds.
- Check altitude, position, and traffic.
- Flare to shoulders at a slower speed and hold.
- Complete all maneuvers above 1,000 feet.
- Evaluate the most effective flare according to the strongest sustainable lift (“sweet spot”).
- Initiate best flare at head height above ground.
- Continue to flare to maintain a flat glide to land.
- Evaluate flare height according to landing results.
## Advancement Criteria

### Equipment
- Complete open parachute system orientation
- RSL orientation

### Spotting and Aircraft
- Correct calculation of the opening point given simple wind conditions
- Active participation with spotting procedures on jump run

### Exit and Freefall
- Cumulative two successive disorienting maneuvers with stability and altitude awareness recovered within five seconds
- Cumulative one barrel roll, one back loop, and one front loop
- One self-supervised freefall

### Canopy
- Unassisted landing within 165 feet of target

**Note:** Once these requirements have been met and you have received the endorsement of a USPA AFF Instructor, your training may be supervised by any USPA Instructor. You may then self-supervise in freefall, but remain under USPA Instructor supervision. A USPA instructional rating holder should accompany you in the aircraft to verify the correct spot, clearance from clouds and aircraft, exit separation, and your position in the aircraft exit order.

---

**Have you joined USPA?**

The United States Parachute Association represents and works for skydivers like you. USPA maintains FAA-recognized skydiving training, licensing, and rating programs, sanctions competitions and much more.

As a USPA member, you receive third-party personal liability and property damage skydiving insurance coverage.

Maintaining a strong association of skydivers requires your participation. Please join at your local drop zone, on line at www.uspa.org, or call (540) 604-9740.
Categories F-H: Group Skydiving Skills

Skydiving is a sport for individualists who like to do things together. In the first portion of the USPA Integrated Student Program, Categories A-E, you focused on the skills required to survive independent freefall: stability control, deployment at the correct altitude, landing in a clear area, and how to use the equipment.

The remaining three categories, F-H, prepare you for more advanced freefall control. More importantly, you get ready for skydiving in groups: in freefall and under canopy.

Your education continues in canopy flight, equipment, and aircraft skills essential for safety. Soon, you will graduate and become independent of supervision. Detailed review also continues on the emergency procedures introduced in the first-jump course.

With the direct assistance of other qualified staff members, such as the USPA Coach, the USPA Instructor continues to supervise your training and monitor your progress during all remaining student jumps until you obtain your USPA A-License.

The freefall portions of Categories F through H address group flying techniques and skills. Under the supervision of a USPA Instructor, a USPA Coach may train you for the freefall skills in these last three categories and accompany you in freefall.

After completing all training and jumps at the end of Category H, you may sign up for a USPA A-license check dive with a USPA Instructor.
Category F
Two Tracking Jumps and Two Clear-and-Pulls

Tracking is a basic group skydiving skill that enables jumpers to gain sufficient freefall separation for a safe opening. It is such an important skill that the freefall training in this category is devoted entirely to tracking techniques.

To begin, while supervising yourself in freefall, practice the basics of the delta position, the first step toward a flat track. The USPA Coach will evaluate and refine your tracking skills as part of the jumps in Categories G and H. Tracking evaluation is part of the A-license check dive with the USPA Instructor.

Flying the canopy slowly and performing flat, altitude-conserving turns is an important skill that can help you out of a difficult landing approach in a tight area.

You will also learn more about how to handle aircraft emergency exit procedures independently. Emergency review includes power line recognition, avoidance, and landing procedures. During this category, you will also make a practice clear-and-pull from 5,500 feet, followed by a clear-and-pull jump from 3,500 feet, as required for the A-License.

By now, you are ready to learn how to pack and should begin working with a packing instructor.

The staff continues to build your understanding of aircraft procedures on jump run with emphasis on separation between groups exiting on the same pass. You also learn the specific procedures for coordinating with the pilot or jumpmaster in the event of an aircraft emergency.

### Learning and Performance Objectives

- Introduction to tracking
- Two clear and pulls
- Braked turns, approaches, and landings
- Extending the glide
- Power-line landing review
- Packing with assistance
- Checking others’ equipment
- Procedures following inactivity
- Winds aloft and the exit point
- Separating groups during exit

### Rules and Recommendations

#### Study USPA BSRs applicable to USPA A-license holders

1. Compliance with Federal regulations (BSR 2-1.B):
   a. **No skydive may be made in violation of Federal Aviation Administration regulations.**
   b. FAA regulations include the use of restraint systems (seatbelts) in the aircraft by all skydivers during movement on the surface (taxiing), takeoff, and landing.

2. Medical requirements (BSR 2-1.C):
   a. All persons engaging in skydiving must:
      (1) Carry a valid Class 1, 2, or 3 Federal Aviation Administration Medical Certificate; or
      (2) Carry a certificate of physical fitness for skydiving from a registered physician; or
      (3) Have completed the USPA recommended medical statement in the DZ liability release waiver.
   b. Any skydiver acting as parachutist in command on a tandem jump must possess a current FAA Third-Class Medical Certificate or equivalent medical certificate acceptable to USPA, or, if residing outside the United States or its territories or possessions, a current Aviation Medical Certificate recognized by the Civil Aviation Authority of the residence country.
3. Age requirements (BSR 2-1.D):
   a. For skydives made within the U.S. and its territories and possessions, skydivers are to be at least 18 years of age.
   b. For skydives made outside the U.S. and its territories and possessions, the minimum age is specified by the country’s (or its national air sport control’s) requirements. Such skydivers who are under 16 years of age will not be issued a USPA license.

   a. For all solo students:
      (1) 14 mph for ram-air reserves (Start Skydiving is waivered to 16 mph for ram-air canopies).
      (2) 10 mph for round reserves.
   b. For licensed skydivers are unlimited.

5. Minimum container opening altitudes above the ground for skydivers are (BSR 2-1.H.2):
   a. Tandem jumps—4,500 feet AGL
   b. All students and A-License holders—3,000 feet AGL
   c. B-License holders—2,500 feet AGL
   d. C- and D-License holders—2,500 feet AGL (waiverable to a minimum altitude of 2,000 feet AGL)

6. Drop zone requirements (BSR 2-1.I.1.a, BSR 2-1.I.2, and BSR 2-1.I.3):
   a. Areas used for skydiving should be unobstructed, with the following minimum radial distances to the nearest hazard:
      (1) Solo students and A-License holders: 330 feet
      (2) B- and C-License holders: 165 feet
      (3) D-License holders: 40 feet
   b. Hazards are defined as telephone and power lines, towers, buildings, open bodies of water, highways, automobiles, and clusters of trees covering more than 32,292 sq. ft.
   c. Manned ground-to-air communications (e.g., radios, panels, smoke, lights) are to be present on the drop zone during skydiving operations.

7. Parachute equipment (BSR 2-1.L.5):
   a. FAA regulations (FAR 105.19) require that when performing night jumps, each skydiver must display a light that is visible for at least three statute miles from the time the jumper is under an open parachute until landing.
   b. All students are to be equipped with the following until they have obtained a USPA A-License:
      (1) A rigid helmet (except tandem students)
      (2) A piggyback harness and container system that includes a single-point riser release and an RSL
      (3) A visually accessible altimeter
      (4) A functional AAD that meets the manufacturer’s recommended service schedule
      (5) A ram-air main canopy suitable for student use
      (6) A steerable reserve canopy appropriate to the student's weight
      (7) For freefall, a ripcord-activated and spring-loaded or BOC throw-out pilot-chute-equipped main parachute
   c. Students must receive additional ground instruction in emergency procedures and deployment-specific information before jumping any unfamiliar system.
   d. For each harness-hold jump, each AFF rating holder supervising the jump must be equipped with a visually accessible altimeter.
   e. All skydivers wearing a round main or reserve canopy and all solo students must wear flotation gear when the intended exit, opening, or landing point is within one mile of an open body of water (this is defined as one in which a skydiver could drown).

8. Special altitude equipment and supplementary oxygen (BSR 2-1.M):
   a. Supplementary oxygen available on the aircraft is mandatory on skydives made from higher than 15,000 feet (MSL)
Study USPA recommendations on training following periods of inactivity

1. Students
   a. Students who have not jumped within the preceding 30 days should make at least one jump under the direct supervision of an appropriately rated USPA Instructor.

2. Licensed skydivers
   a. Skydivers returning after a long period of inactivity encounter greater risk that requires special consideration to manage properly.
   b. Care should be taken to regain or develop the knowledge, skills, and awareness needed to perform the tasks planned for the jump satisfactorily.
   c. Jumps aimed at sharpening survival skills should precede jumps with other goals.

3. Changes in procedures
   a. If deployment or emergency procedures are changed at any time, the skydiver should be thoroughly trained and practice under supervision in a harness simulator until proficient.
   b. Ground training should be followed by a solo jump which includes several practice sequences and deployment at a higher than normal altitude.
   c. The jumper should repeat ground practice at short intervals, such as before each weekend's jump activities, and continue to deploy at a higher than normal altitude until thoroughly familiar with the new procedures.

4. Long lay-offs
   a. Jumpers should receive refresher training appropriate for their skydiving history and time since their last skydive.
      (1) Jumpers who were very experienced and current but became inactive for a year or more should undergo thorough training upon returning to the sport.
      (2) Skydivers who historically jump infrequently should review training after layoffs of even less than a year.
   b. Skydiving equipment, techniques, and procedures change frequently.
      (1) During recurrency training following long periods of inactivity, jumpers may be introduced to new and unfamiliar equipment and techniques.
      (2) Procedures change to accommodate developments in equipment, aircraft, flying styles, FAA rules, and local drop zone requirements.
   c. Returning skydivers require thorough practical training in the following subject areas:
      (1) aircraft procedures
      (2) equipment
      (3) exit and freefall procedures
      (4) canopy control and landings
      (5) emergency procedures
   d. A-License
      (1) USPA A-license holders who have not made a freefall skydive within 60 days should make at least one jump under the supervision of a currently rated USPA instructional rating holder until demonstrating altitude awareness, freefall control on all axes, tracking, and canopy skills sufficient for safely jumping in groups.
   e. B-License
      (1) USPA B-license holders who have not made a freefall skydive within the preceding 90 days should make at least one jump under the supervision of a USPA instructional rating holder until demonstrating the ability to exercise the privileges of that license safely.
   f. C and D-Licenses
      (1) USPA C and D-license holders who have not made a freefall skydive within the preceding six months should make at least one jump under the supervision of a USPA instructional rating holder until demonstrating the ability to exercise the privileges of that license safely.
## Equipment

1. Pack at least one parachute with the assistance of a knowledgeable packer.

2. Discuss the most important points of packing:
   (Note: An FAA rigger is your best resource for this discussion.)
   a. Lines straight and in place in the center of the completed pack job
   b. Slider up (orientation closest to the canopy)
   c. Tight line stows to prevent premature line deployment

3. Perform a pre-jump equipment check on another jumper who is in full gear:
   a. "Check of threes" in the front:
      (1) Three-ring assembly (and reserve static line)
      (2) Two points of harness attachment for snap assembly, correct routing, adjustment, & no twists
      (3) Three operation handles: main activation, cutaway, reserve
   b. Pin check back of system, top to bottom:
      (1) Automatic activation device on and set to correct mode
      (2) Reserve pin at least halfway seated
      (3) Main pin fully seated
      (4) Ripcord cable movement or correct bridle routing
      (5) If collapsible pilot chute, check the indicator window
      (6) Activation handle in place
   c. Check personal equipment ("SHAGG"):
      (1) Shoes: tied, no hooks
      (2) Helmet: fit and adjustment
      (3) Altimeter: set for zero
      (4) Goggles: tight and clean
      (5) Gloves: lightweight and proper size (only if below 40° at exit altitude)

## Spotting and Aircraft

1. Acting without a rated USPA instructor during routine jump operations and aircraft emergencies:
   a. The person spotting the load usually serves as the jumpmaster.
   b. In larger aircraft, the jumpmaster should establish an exclusive chain of communication with pilot.
      (1) A communication assistant should be able to communicate directly with the pilot and the jumpmaster simultaneously.
      (2) Other jumpers should not get involved in communication among the pilot, communications assistant, and the jumpmaster.

2. Review of low-altitude exit procedures:
   a. The jumpmaster must determine if jumpers are over a safe landing area and communicate this information to the pilot.
   b. Establish firm altitudes at which certain aircraft emergency decisions would be made (DZ policy):
      (1) Altitude below which all jumpers will land with the aircraft (less than 1,500 feet)
      (2) Altitude below which all jumpers will jump using their reserves (1,500 feet to 3,500 feet)
      (3) Altitude below which all jumpers will jump and immediately use their mains (3,500’ to 5,500’)
   c. Jumpers must maintain correct weight distribution in the aircraft, especially during emergency exits
3. The effect of the winds aloft on the exit point:

   a. Subtract the speed of the headwind on jump run (if flown into the wind) from the airspeed of the aircraft to determine the ground speed.
   b. Jumpers are first thrown forward on exit (approximately 0.2 miles in calm winds, less with headwind) from residual aircraft speed and then fall straight down or blow toward the target.
   c. The winds aloft will cause freefalling jumpers to drift according to the wind's strength and direction.
   d. Winds generally diminish at lower altitudes.
   e. Average the speed and the direction of the winds from exit altitude to 3,000 feet AGL to estimate freefall drift. See the example in Table F.1 below for a sea-level drop zone:

<table>
<thead>
<tr>
<th>Altitude</th>
<th>Heading</th>
<th>Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000 f</td>
<td>250</td>
<td>07</td>
</tr>
<tr>
<td>6,000 f</td>
<td>260</td>
<td>14</td>
</tr>
<tr>
<td>9,000 f</td>
<td>270</td>
<td>16</td>
</tr>
<tr>
<td>12,000 f</td>
<td>290</td>
<td>23</td>
</tr>
<tr>
<td>Average</td>
<td>270</td>
<td>15</td>
</tr>
</tbody>
</table>

(Note: 15 mph = ¼ mile per minute)

Table F.1 – Averaging the winds aloft. Note: Averaging the force and direction of the winds aloft works sufficiently in common jump conditions. A vector analysis provides more accurate results.

(1) If flying jump run upwind, use the average heading of 270 degrees.
(2) Aircraft forward throw is approximately 1/8-1/4 mile upwind in the light-to-moderate headwind.
(3) Jumpers fall for one minute, drifting at 1/4 mile per minute for 1/4 mile of drift downwind.
(4) Since the forward throw and the freefall drift approximately cancel each other, the ideal exit point is almost straight over the ideal opening point in this example.

4. Group separation on jump run:

   a. Slower-falling jumpers and groups are exposed to upper headwinds longer and are blown farther downwind than faster-falling jumpers and groups.
      (1) Slower-falling groups should exit before faster-falling groups if jump run is flown into the wind.
      (2) On days with strong upper headwinds, allow more time between groups on the same pass to get sufficient horizontal separation over the ground.
         (a) Provide at least 1,000 feet of ground separation between individuals jumping solo.
         (b) Provide at least 1,500 feet of ground separation between small groups, adding more as size of the groups increase.
      (3) Once the parachute has opened, delay flying up or down the line of flight until:
         (a) Any slower-falling group that exited before has opened their parachutes and turned toward the landing area.
         (b) The group exiting after has completed their freefall and opened.
   b. Flying jump run across the upper winds (crosswind) helps achieve separation between groups.
   c. Whether flying one or more aircraft, each pass should allow enough time for jumpers on a previous pass to descend to a safe altitude before dropping jumpers from the next pass.

5. Perform all duties on jump run with minimum assistance, including:

   a. Operating the door (if the pilot allows)
   b. Monitoring progress during jump run
   c. Directing the pilot to the correct spot
   d. Choosing the correct exit point
Exit and Freefall

1. Initiating a track:
   a. First, locate a point on the horizon.
   b. Smoothly extend both legs fully to initiate forward motion.
   c. Control in the delta and track positions:
      (1) Dip one shoulder slightly in the direction of the turn to make heading corrections.
      (2) Make only small corrections.
   d. Slowly extend your torso by stretching your shoulders toward your ears and flatten your arch.
   e. Fully extend your arms to the side 90° to your spine and level with your hips.

2. Refining the track:
   a. Once establishing a heading in a positive forward dive, fully extend both legs with your knees locked and toes pointed.
   b. Stiffen your body slowly into a slight reverse arch, pushing down and forward slightly with your shoulders, while keeping your hands level with your hips.
   c. Continually adjust your body position to meet the relative wind effectively.

3. Tracking practice procedure:
   a. Experienced jumpers often allow only five to ten seconds to obtain adequate separation.
   b. Practice entering & refining an on-heading track for five seconds, reversing direction, & repeating.

4. Tracking jump safety:
   a. Fly exactly perpendicular to the jump run to avoid others up and down the line of flight.
   b. Always plan tracking dives with other groups in mind.
   c. Learn to control a track on heading first, and then develop techniques for pitch and speed.

5. Clear and pull:
   a. A clear and pull is used for emergency exits and pre-planned low-altitude jumps.
   b. Use a familiar, stable, poised exit technique.
   c. Present your hips to the relative wind and execute normal pull procedures (without wave-off) to deploy within five seconds of exit.
   d. Expect the parachute to open in relation to the relative wind, not overhead as usual.
   e. The sequence consists of a clear and pull from two altitudes:
      (1) first from 5,500 feet
      (2) once successful, from 3,500 feet
Canopy

1. Braked turns:
   a. Performed correctly, braked turns provide the quickest heading change with the least altitude lost.
   b. A braked turn may be the best choice when a quick heading change is needed:
      (1) When suddenly encountering another jumper under canopy or someone in the landing area
      (2) Recognizing an obstacle
      (3) Too low to recover from a full-flight turn
   c. Practice braked turns:
      (1) From the slowest speed at which the canopy will fly, raise one toggle slightly to initiate a
         heading change in the opposite direction.
      (2) Try to change heading as quickly as possible without banking or stalling.

2. Using brakes to attain the maximum glide and minimum descent:
   a. On lower-glide designs, the minimum descent may begin nearer the half-braked position.
   b. On higher-glide designs, the minimum descent may be nearer the three-quarter braked position or
      just prior to a full stall (reverse flight).
   c. Some canopies achieve minimum descent using the rear risers instead of the toggles.
   d. Minimum sustainable descent (float):
      (1) Allows the jumper to remain above other jumpers on descent
      (2) Allows the canopy to cover a greater distance

3. Recognizing and adjusting for minimum descent and maximum glide ("accuracy trick"):
   a. Look ahead to the point on the ground that appears not to rise or sink in your field of vision:
      (1) Everything before that point appears to fall.
      (2) Everything beyond it appears to rise.
      (3) That point is the projected landing point on the canopy's current glide slope.
   b. Pull the toggles down slightly to see if the stationary point moves farther away:
      (1) If so, the glide slope has flattened.
      (2) The canopy will cover more distance.
   c. Repeat until the point begins to move closer, then return to the maximum glide position that you
      have just determined.

4. When flying downwind in maximum glide:
   a. As the winds decrease at lower altitudes, your glide slope will degrade.
   b. The actual landing area will be closer than you initially anticipated.

5. Increasing the glide when flying against the wind:
   a. In lighter winds, may improve distance.
   b. In stronger winds, may slow the canopy too much and reduce its upwind range.

6. Braked pattern and landing approach:
   a. Fly one entire landing pattern in at least half brakes, to determine the effect on glide path.
   b. Plan for a change in glide slope:
      (1) A lower-glide design may require a smaller pattern when flown in brakes.
      (2) A higher-glide design may require a bigger pattern when flown in brakes; extend the final
         approach to avoid overshooting the target.
   c. Fly final approach in quarter to half brakes.
   d. Flare carefully from the braked position:
      (1) Practice high to avoid a stall.
      (2) To get the best flare may require a shorter, quicker stroke initiated lower to the ground.
      (3) The stall may occur more abruptly.
      (4) Plan for a PLF.
   e. A smaller canopy may descend too quickly in deep brakes for a safe braked landing.

Accumulate two unassisted landings within 80 feet of the planned target.
Emergency Procedure Review

1. Recognizing and avoiding power lines:

a. Power lines present a serious hazard to all aviators; know where they are near your DZ.
   (1) Expect power lines to appear typically along roads, between buildings, in and along straight-line paths through wooded areas and in the forest, and randomly in open fields, as well as other random places.
   (2) They may be invisible, except for their poles.

b. Identify power lines in the landing area as early as possible and steer to avoid them.
   (1) Scan every 500 feet of descent into an unfamiliar landing area.
   (2) Continually scan below 500 feet.

2. Review and practice emergency procedures for a powerline landing in a training harness:

a. Power lines can be extremely dangerous: if there is no other alternative, landing in trees, in water, or on a small obstacle may be preferable to landing in power lines.

b. A steep dive following sharp turns from full flight close to the ground can be equally dangerous, so it is important to identify power lines and wires near your landing area and continue steering to avoid them while enough altitude remains to do so safely, avoiding sharp turns near the ground.
   (1) If a low-altitude avoidance turn is necessary to avoid power lines:
      (a) Prepare for a hard landing (PLF).
      (b) Only make the minimum, flat, braked turn necessary to avoid the lines.
      (c) Attempt to land parallel to the power lines and wires when possible.
      (d) Execute a braked landing and flare.

c. Emergency procedures for landing in a power line if a power line landing is unavoidable:
   (1) Drop any ripcords or other objects.
   (2) Pull both toggles to the halfway position to bring the canopy to slow flight.
   (3) Protect your face by covering it with your forearms.
   (4) Prepare for a hard landing (PLF) with your feet and knees tightly together.
   (5) Turn your head to one side away from wires with chin down to protect your chin.
   (6) Try to avoid touching any power lines or wires if possible.
      (a) Do not touch more than one power line or wire at a time.
   (7) If suspended in the wires:
      (a) Stay still and keep your helmet on.
      (b) Prepare to drop the rest of the way to the ground at any moment
      (c) Wait for competent, knowledgeable help from drop zone staff and power company personnel for help in getting down.
      (d) The parachute’s nylon can conduct electricity at higher voltages, so the power needs to be off before making contact with anyone or anything on the ground.
      (e) Verify and confirm only with the power company that the electrical power is turned off and will stay off until recovery operations are complete.
   (8) If the computer controlling the power distribution senses a fault in the line, computer-controlled resets may attempt to turn the power back on without warning.
Category F Quiz
(Must be passed before Category F-1 jump.)

1. What is the best way to change direction of canopy flight while conserving the most altitude?
   a) Braked turns.
   b) Rear riser turns.
   c) Front riser turns.

2. What happens if a canopy is controlled too deeply in brakes?
   a) It dives.
   b) It bucks.
   c) It stalls.

3. Describe the difference between flaring from half brakes and full glide?
   a) Flaring from half brakes requires a quicker stroke, the stroke is shorter, and stalls occur sooner.
   b) Flaring from half brakes requires a slower stroke, the stroke is shorter, and stalls occur sooner.
   c) Flaring from half brakes requires a slower stroke, the stroke is longer, and stalls occur sooner.

4. How does the half-braked position affect the canopy’s flight?
   a) Speeds descent, changes glide
   b) Slows descent, changes glide
   c) Slows descent

5. How is heading corrected during a track?
   a) Dip leg in direction of the turn.
   b) Turn head slightly towards direction of the turn.
   c) Dip one shoulder slightly in the direction of the turn.

6. When making tracking jumps from large plane, why is it important to track perpendicular to the jump run?
   a) To stay clear of FAA controlled airspace
   b) To avoid other groups ahead and behind
   c) To avoid plane on its descent

7. What is the ground speed of a jump aircraft with an airspeed of 90 mph when flying against a 50 mph headwind on jump run?
   a) 40 mph
   b) 140 mph
   c) 90 mph

8. How can jumpers assure adequate separation between groups exiting the aircraft?
   a) Count slowly to five.
   b) Gauge separation according to position over the ground.
   c) Gauge separation according to GPS instruments.

9. What are the three most important aspects of packing the main canopy?
   a) Stow brakes, lines straight and in place in the center, nose rolled tightly.
   b) Lines straight and in place in the center, slider up, tail rolled tightly.
   c) Lines straight and in place in the center, slider up, tight line stows.

10. How can you tell if the RSL is routed correctly?
    a) Clear path from snap shackle to guide ring.
    b) Buckle is fully closed.
    c) Red tab is visible.
11. What is the minimum pull altitude allowed for student skydivers and A-License holders?
   a) 3,000 feet
   b) 2,500 feet
   c) 2,000 feet

12. What are the maximum winds allowed for student skydivers?
   a) 10 mph
   b) 14 mph
   c) 18 mph

13. If a jumper falls for one minute through upper winds averaging 30 mph from the west: How far will the jumper drift?
   a) 1/2 mile
   b) 1/4 mile
   c) 3/4 mile

14. (continued from 13) If a jumper falls for one minute through upper winds averaging 30 mph from the west: In which direction will the jumper drift?
   a) west
   b) east
   c) north-northeast

15. What is the procedure for landing in power lines?
   a) Make any maneuvers necessary to avoid landing in power lines.
   b) Avoid the area early during the descent, minimum braked turn necessary to avoid lines, land parallel to the wires, braked landing, prepare for PLF, try to touch only one line at a time, wait for help and confirmation that the power has been turned off and will remain off until recovery operations are complete.
   c) Get as big as possible, disconnect RSL (if time), cut away, prepare to PLF.

16. In the event of an aircraft emergency with no students or instructors aboard, who should coordinate procedures between the pilot and the other jumpers on the load?
   a) The person closest to the pilot
   b) The most senior jumper
   c) Jumpmaster or spotter

17. How many jumps are required for the USPA A-License?
   a) 20
   b) 25
   c) 30

18. What does a USPA A-License permit a skydiver to do?
   a) Compete in USPA competitions and events.
   b) Jump without supervision and pack anyone's main parachute.
   c) Jump without supervision, pack his or her own main parachute and engage in basic group jumps

19. What should an A-licensed jumper do to regain currency after ten weeks of inactivity?
   a) Make at least one jump under the supervision of a USPA instructional rating holder.
   b) Go through the first jump course and repeat all necessary ISP categories.
   c) Make at least one static line jump.

20. What should an A-licensed jumper do to regain currency after four months of inactivity?
   a) Make at least one jump beginning in Category D with a USPA AFF Instructor or in Category B with a USPA IAD Static-Line, or Tandem Instructor before proceeding to unsupervised freefall.
   b) Make at least one jump under the supervision of a USPA instructional rating holder.
   c) Go through the first jump course and repeat all necessary ISP categories.
Category F Dive Flows
One AFF Instructor or USPA Coach

F-1 & F-2 Freefall Dive Flows

• Perform all spotting procedures with minimal assistance. Coach observes spot to ensure safety.
• Stable solo poised exit from full altitude.
• Perform one smooth PPCT w/in 5 seconds of exit.
• Altitude, arch, legs, relax, correct turn if needed.
• Turn 90° from the line of flight.
• Altitude, arch, legs, relax, correct turn if needed.
• Track for five seconds (start, coast, and stop).
• Altitude, arch, legs, relax, correct turn.
• Turn 180°, remaining perpendicular to jump run.
• Altitude, arch, legs, relax, correct turn if needed.
• Track for five seconds (start, coast, and stop).
• Altitude, arch, legs, relax, correct turn if needed.
• Repeat tracking sequences until 6,000 feet.
• Stop final track by 5,000 feet.
• Wave off at 4,500 feet (must do so to pass).
• Pull by 4,000 feet (must be stable to pass).

F-3 & F-4 Freefall Dive Flows

• Category F-3 is a clear-and-pull from 5,500 feet.
• Category F-4 is a clear-and-pull from 3,500 feet.
• Perform all spotting procedures with minimal assistance. Coach observes spot to ensure safety.
• Solo poised exit position. Must be stable to pass.
• Initiate deployment within five seconds without waving off, regardless of stability.

Canopy Dive Flow
(Same for all jumps in Cat-F)

• Correct any common canopy problems.
• Release brakes, conduct a canopy controllability check, and move to the holding area.
• Check altitude, position, and traffic.
• Discovery of stall point.
• Discovery of flattest glide; lowest descent.
• Practice flaring from half to three-quarters brakes.
• Practice 180° turns while flying in deep brakes.
• Find landing area and pattern entry point.
• Divide flight path by thousands of feet.
• Look at runway & determine compass heading.
• Identify suspect areas of turbulence.
• Identify all power lines in the area during descent.
• Continue to scan for obstacles every 500 feet.
• Verify landing pattern & adjust as necessary.
• Steer over correct portion of flight path and continue to stay in the holding area until 1,000’.
• Follow pre-assigned pattern in half-brakes over the planned or alternate landing area.
• Scan for obstacles from base until landing.
• Prepare to PLF once on final at 300 feet.
• Continue flying at half-brakes until time to flare.
• Flare for landing from half-brakes.
(Shorter, quicker stroke initiated lower to ground.)
• Coach measures the student’s landing distance from a planned target.

Advancement Criteria

Aircraft and Spotting
• Spot the aircraft, including all procedures, with minimum assistance.

Exit and Freefall
• Cumulative three tracking sequences: track for five seconds within 30° of the planned heading, turn 180°, and track back for five seconds
• One stable clear-and-pull from 5,500 feet
• One stable clear-and-pull from 3,500 feet
(Must deploy within 5 secs of exit while stable.)

Canopy
• Cumulative four 180° turns under canopy while flying in deep brakes
• Braked approach and landing on a canopy that allows for a safe braked landing
• Cumulative two unassisted landings within 83 feet of the planned target (jumps from previous categories count toward accuracy requirements)

Equipment
• One complete pack job with assistance
• Perform a pre-jump equipment check on another jumper fully rigged and ready to jump
Category G
Four Jumps

Freefall skills in Category G address group skydiving maneuvers. They are outlined here for the discipline of formation skydiving (flat, or belly flying) but can be performed in other orientations with a USPA Coach knowledgeable in those techniques. The same performance and advancement criteria for maneuvering, docking, break-off, and gaining separation for a safe opening apply, however. In Category G, you will review, in more in depth, the procedures for avoiding and responding to canopy collisions, which are always more of a risk in jumping with groups. By now, you should be looking for traffic and steering with rear risers before releasing your brakes. After opening, you will explore the performance envelope of the ram-air canopy to prevent surprises near the ground. Practice includes maximum-performance turns, reverse turns, and keeping the wing in balance during performance maneuvers to avoid a line twist. You will learn to feel the turn. You will review how to avoid tree landings and what to do if it is inevitable. By now, you should be packing with minimal assistance, but USPA recommends supervision until your A-license. Along with practicing packing, you will learn how to inspect the equipment for wear and how to prevent it. Before advancing, you should understand the responsibilities of the FAA rigger, who maintains most items. All skydivers need to respect the power of various kinds of weather, which begins with understanding basic weather patterns and reading the danger signals. A pilot or instructor advises you on practical ways to predict the kind of weather that could compromise your safety.

Learning and Performance Objectives

- Group exits
- Floater position
- Forward and backward movement
- Adjusting fall rate
- Start and stop
- Docking
- Maximum-performance canopy turns
- Canopy collision avoidance and response review
- Tree landing review
- Equipment maintenance inspection
- Weather for skydivers

Rules and Recommendations
(Note: An FAA rigger should teach this section.)

1. It requires at least an FAA senior rigger to maintain and repair the parachute system.
   Read and discuss FAR 65.125 through FAR 65.133 below with an FAA rigger:
   a. A certificated senior parachute rigger may:
      (1) Pack or maintain (except for major repair) any type of parachute for which he is rated; and
      (2) Supervise other persons in packing any type of parachute for which that person is rated.
   b. A certificated master parachute rigger may:
      (1) Pack, maintain, or alter any type of parachute for which he is rated; and
      (2) Supervise other persons in packing, maintaining, or altering any type of parachute for which the certificated parachute rigger is rated.
   c. A certificated parachute rigger need not comply with the following (relating to facilities, equipment, performance standards, records, recent experience, and seal) in packing, maintaining, or altering (if authorized) the main parachute of a dual parachute pack to be used for intentional jumping.
   d. No certificated parachute rigger may exercise the privileges of his certificate unless he has at least the following facilities and equipment available to him:
      (1) A smooth top table at least three feet wide by 40 feet long.
      (2) Suitable housing that is adequately heated, lighted, & ventilated for drying & airing parachutes
      (3) Enough packing tools & other equipment to pack & maintain the types of parachutes serviced
      (4) Adequate housing facilities to perform his duties and to protect his tools and equipment
e. No certificated parachute rigger may:
   (1) Pack, maintain, or alter any parachute unless he is rated for that type;
   (2) Pack a parachute that is not safe for emergency use;
   (3) Pack a parachute that has not been thoroughly dried and aired;
   (4) Alter a parachute in a manner that is not specifically authorized by the Administrator or the manufacturer;
   (5) Pack, maintain, or alter a parachute in any manner that deviates from procedures approved by the Administrator or the manufacturer of the parachute; or
   (6) Exercise the privileges of his certificate and type rating unless he understands the current manufacturer's instructions for the operation involved and has:
      (a) Performed duties under his certificate for at least 90 days within the preceding 12 months;
      (b) Or shown the Administrator that he is able to perform those duties.

f. Each certificated parachute rigger shall keep a record of the packing, maintenance, and alteration of parachutes performed or supervised by him. He shall keep in that record, with respect to each parachute worked on, a statement of:
   (1) Its type and make;
   (2) Its serial number;
   (3) The name and address of its owner;
   (4) The kind and extent of the work performed;
   (5) The date when and place where the work was performed; and
   (6) The results of any drop tests made with it.

g. Each person who makes a record under the section above shall keep it for at least two years after the date it is made.

h. Each certificated parachute rigger who packs a parachute shall write on the parachute packing record attached to the parachute the date and place of the packing and a notation of any defects he finds on inspection. He shall sign that record with his name and the number of his certificate.

i. Each certificated parachute rigger must have a seal with an identifying mark prescribed by the Administrator, and a seal press. After packing a parachute, he shall seal the pack with his seal in accordance with the manufacturer's recommendation for that type of parachute.

2. Read and discuss FAR 105.43 with an FAA rigger:

   No person may conduct a parachute operation using a single-harness, dual-parachute system, and no pilot in command of an aircraft may allow any person to conduct a parachute operation from that aircraft using a single-harness, dual-parachute system, unless that system has at least one main parachute, one approved reserve parachute, and one approved single person harness and container that are packed as follows:

   a. The main parachute must have been packed within 180 days before the date of its use by a certificated parachute rigger, the person making the next jump with that parachute, or a non-certificated person under the direct supervision of a certificated parachute rigger.

   b. The reserve parachute must have been packed by a certificated parachute rigger:
      (1) Within 180 days before the date of its use, if its canopy, shroud, and harness are composed exclusively of nylon, rayon, or similar synthetic fiber or material that is substantially resistant to damage from mold, mildew, and other fungi, and other rotting agents propagated in a moist environment; or
      (2) Within 60 days before the date of its use, if it is composed of any amount of silk, pongee, or other natural fiber, or material not specified above.

   c. If installed, the automatic activation device (AAD) must be maintained in accordance with manufacturer instructions for that automatic activation device.
1. Detailed identification and inspection of high-wear items requiring rigger maintenance:

   a. Pilot chute and deployment handle:
      (1) Look for broken stitching around the apex and the seam where the pilot chute canopy fabric
          and mesh meet.
      (2) Check for security at the bridle attachment point.
      (3) The fabric and mesh should be in good condition; both eventually wear out.

   b. Bridle Velcro:
      (1) Velcro anywhere degrades with use and needs to be replaced every 100-250 uses.
      (2) Bridle Velcro is particularly important, because if it comes loose, it can cause a premature
          deployment.
      (3) Velcro should be clean, dry, and free of debris.

   c. Deployment bag:
      (1) Look for distortion in the grommets, especially at the bridle, and fabric damage around their
          edges.
      (2) Check the loops that hold the line stow bands.
      (3) If Velcro is used, replace it as necessary.

   d. Closing pin:
      (1) Check that the loop holding the closing pin to the bridle is secure and not being cut by the eye
          of the pin.
      (2) Check for nicks or corrosion on the pin and replace it if any appear.

   e. Bridal attachment:
      (1) Look for wear where the bridle attaches to the canopy.
      (2) Look for broken stitching on the canopy itself where it is reinforced for the bridle attachment
          loop or ring.

   f. Likely areas of damage on the top center skin, end cells, and stabilizers:
      (1) Check for small holes on the top skin from where the bridle attachment stop ring has caught
          fabric in the bag's top grommet (avoidable with good packing technique).
      (2) Look for wear on the top skin and end cells caused by contact with sharp objects or stickers.
      (3) Look for wear in and around the reinforcements in the stabilizers that contain the slider stops.
      (4) Look for broken or missing stitching along the seams.

   g. Slider:
      (1) Inspect for distortion in the slider grommets and wear around their inside edges.
      (2) Sliders are important, high stress components and should be maintained to the highest
          standard.

   h. Lines:
      (1) Look for wear anywhere along the lines, but especially where the slider grommets contact metal
          connector links.
      (2) Line damage at the links calls for line replacement, but the rigger can also advise the jumper
          about link choices, protection and habits that minimize damage.
      (3) Lines sometimes shrink unevenly over time.
      (4) All lines eventually require replacement; refer to the manufacturer’s recommendations.

   i. Slider bumpers (metal connector links):
      (1) Slider bumpers protect the slider grommets and lines from damage by taking it themselves;
          most require periodic replacement.
      (2) Slider bumpers need to be tight on the link or secured to prevent them from sliding up the lines
          and stopping the slider.
j. Brake system:
   (1) When Velcro is used, placing the toggles on the risers immediately after landing prevents Velcro damage and tangles.
   (2) Velcro needs to be replaced when worn.
   (3) Velcro and general use wears the lower brake lines, which a rigger can easily replace.
   (4) Examine the brake lock eye for damage and wear.
   (5) Look at the attachment point for the keeper ring, including the attachment ring stitching on the opposite surface of the riser.
   (6) Inspect tuck-tab toggle keepers for security.

k. Riser release system:
   (1) Look for wear in the loops holding the rings and the white retaining loop, especially if you drag your rig when stowing the lines (not advised).
   (2) Be sure that any service bulletins on risers for the system have been completed.
   (3) Check the fittings on both ends of the cable housings for security.
   (4) Look for kinks in the release cable where it contacts the white retaining loop, which may indicate a problem with hard openings or the design & construction of the three-ring assembly.
   (5) Check the front and back of the riser webbing for fraying or strains around the edges of the grommets.
   (6) Look for broken or loose tacking on the cable housings.
   (7) Check riser inserts (for cutaway cable ends) if installed.

l. Riser covers:
   (1) Replace any retaining Velcro when it loses tackiness.
   (2) Replace distorted tuck flaps when they become ineffective (happens with use).

m. Main container closing grommets:
   (1) Inspect for distortion and fabric damage around the edges.
   (2) Feel for severe distortion or breakage of the plastic stiffener inside the fabric where the grommet is set.

n. Main and reserve pin covers:
   (1) Replace Velcro when it fails to stay firmly attached.
   (2) Replace plastic stiffeners when distortion from use renders them ineffective.

2. Store the parachute in a cool, dry, dark place:
   a. Heat weakens AAD batteries; cars are too hot for safe prolonged storage in the summer.
   b. The ultraviolet rays of the sun degrade nylon.
   c. Moisture:
      (1) Corrodes hardware (very dangerous, since rust degrades nylon)
      (2) Promotes mildew (undesirable but harmless to nylon)
   d. Many chemicals and acids damage parachute materials.
   e. Heat may weaken elastic stow bands.

3. Premature deployments become more dangerous in groups:
   a. AADs:
      (1) Use caution when wearing an AAD, especially near an open aircraft door and during climb out.
      (2) Adhere strictly to the AAD manufacturer’s service standards:
         (a) To improve their chances for correct operation
         (b) To help prevent premature AAD activation
         (c) To comply with the law
      (3) Remain clear of the area directly above and below another jumper, in case his or her parachute activates prematurely from the AAD or other unplanned event.

Pack one main parachute without assistance.
Spotting and Aircraft
(Note: A pilot or instructor should teach this section.)

1. Read and discuss the information on USPA recommendations regarding weather below (SIM Section 5-5) with a pilot or instructor:
   a. Weather conditions hazardous to skydivers.
      (1) Fronts approach with much warning but can catch the unaware off guard.
         (a) Some fronts are preceded by a gust front (a line of sudden and severe weather).
         (b) Frontal approach and passage may be associated with rapid and significant changes in the strength and direction of the winds aloft and on the surface.
      (2) On calm, hot, humid days, thunderstorms can spontaneously generate and move in unpredictable patterns.
      (3) Dust devils are mini-tornadoes that spontaneously generate on days of high thermal convection activity.
   b. Practical methods to observe weather and where to obtain forecasts on approaching weather:
      (1) The Weather Channel
      (2) www.weather.com
      (3) TV weathercasts
      (4) Pilot assistance (legally responsible to know the weather conditions before flight)
      (5) Continuous observation

2. Select the spot and guide the pilot to the correct position without assistance in routine weather conditions.

Exit and Freefall

1. Group exits:
   a. Practice for an efficient climb-out and launch:
      (1) Each jumper in a group has an assigned exit position and should know that position before climb-out.
      (2) The exit position should include specific, exact foot and hand placement for the best launch position and presentation of hips and limbs into the relative wind.
      (3) The jumpers count together with body movement, where possible, for a simultaneous or near-simultaneous launch.
   b. Exit into a neutral body position and hold aircraft heading.
   c. Relax and confirm stability prior to turning towards your coach.
   d. Establish stability independently on exit before turning toward your partner.
   e. Exit grips:
      (1) If taken, grips should allow all jumpers to leave in a natural flying position.
      (2) Main lift web and chest strap grips are counterproductive for most belly-to-earth group exits.

2. Forward and backward movement (belly to earth):
   a. Use legs only for forward movement and steering:
      (1) Extending both legs tilts the jumper head-low and begins a slide in that direction.
      (2) Extending one leg more than the other causes a turn in the opposite direction:
         (a) Extending the right leg causes a left turn.
         (b) Extending the left leg causes a right turn.
   b. Maintain both arms in neutral during forward movement and docking.
   c. Extend both arms and push down for backward movement.
   d. Extending the arms slightly to take a grip will counter forward movement but cause backsliding if initiated too soon or for too long.
3. Adjusting fall rate (belly to earth):
   a. Increase vertical freefall speed by streamlining:
      (1) Hips forward
      (2) Shoulders back
      (3) Relax abdominal muscles
   b. Slow freefall speed by maximizing surface area:
      (1) Cupping the shoulders around the sternum
      (2) Rounding the spine (cupping the abdomen)
      (3) Extending arms or legs to counterbalance and maintain a level attitude
   c. When recovering altitude from below the level of a formation:
      (1) Turn 90 degrees relative to the formation to keep it in view.
      (2) To avoid a collision, remain clear of the area immediately below and above any group.
   d. Recognize the visual cues for level approach (on exit, regardless of the horizon):
      (1) Backpack in sight: come down
      (2) Front of the leg straps in sight: come up
   e. Maintain altitude awareness.

4. Docking:
   a. Dock using a level approach.
   b. Once docked, arch across the shoulders to maintain the fall rate (elbows up) and stay level with your partner or the formation.
   c. Extend both legs to counter any tension created in the formation when holding grips.
   d. Maintain altitude awareness.

5. Break-off:
   a. Check altitude every four or five seconds and after each maneuver.
   b. Break off without prompting.
   c. Plan the break-off altitude to allow enough time to track 50 feet.
   d. The most positive way to signal break-off is to turn and track.
      (1) As a safety back-up in Categories G and H:
         (a) If the coach waves his or her arms, immediately turn and track to the planned deployment altitude.
         (b) If the coach deploys, deploy immediately without tracking.
         (c) Deploy at planned altitude whether or not you have turned or tracked.
         (d) Never rely on the USPA Coach for break off or deployment cues.
      (2) You are always responsible to break off and open at the planned altitude on jumps with the USPA Coach, as well as others after you get your license.
   e. When tracking, establish and maintain the correct heading for the radius of the formation.
   f. For beginners, tracking moderately in a straight line in the right direction is more effective than going fast in a curve or in the wrong direction. Break off high enough to gain separation.

6. For additional requirements for break-offs from free-flying jumps, see SIM Section 6-2.

7. To avoid hard openings, slow down to a minimum freefall velocity before deploying by maintaining a neutral belly-to-earth body position.
Emergency Procedure Review

Note: A USPA Instructor should teach this section. A canopy formation specialist is also a good source.

1. Review and discuss canopy collision avoidance with a USPA Instructor or a canopy formation specialist:
   a. Jumpers must avoid collisions with other jumpers under open parachutes.
   b. The best way to avoid a collision is to know where other nearby jumpers are at all times while under canopy, especially during opening. Steer with the rear risers to avoid them.
   c. Always look in the direction of a turn before initiating it.
   d. Most canopy collisions occur soon after deployment when two jumpers open too close to each other, or below 1,000 feet while in the landing pattern (base-final intersection).
   e. Higher break-off altitudes, better planning, and tracking farther can help ensure clear airspace during deployment.
   f. If a pending head-on collision is imminent, in most cases both jumpers should steer their canopies clear by turning to the right unless it is obvious that steering left is necessary to avoid the collision (both jumpers are more offset towards the left).

2. Study and discuss the USPA recommended emergency procedures for canopy collision response:
   a. Both of the jumpers should flare to half-brakes and assume the PLF body position as you would if landing in a tree or power lines to protect your face and operation handles from impact:
      (1) Chin down to your chest, legs slightly bent and pressed tightly together, arms and elbows tucked in tightly against the sides of your body, covering your face and operation handles
   b. This also helps prevent you from contacting the other jumper’s suspension lines, which can cause serious injuries if the canopy has small diameter suspension lines.
   c. Avoid hitting the suspension lines of the other canopy or the other jumper, if possible.
   d. Check altitude with respect to the recommended minimum cutaway decision and execution altitude.
   e. Jumpers should know their altitude at all times, because it will often dictate the course of action.
   f. When entanglements occur, jumpers must be prepared to react quickly and creatively.
   g. In many cases, the emergency is one that cannot be prepared for in advance; it may even be a problem no one imagined could happen.
   h. If two jumpers collide and entangle, they must communicate their intentions before taking action.
      (1) Jumpers should be specific in discussing their intentions.
      (2) Communications may be difficult if one or both jumpers are wearing full-face helmets.
   i. If the entanglement occurs with sufficient altitude, the jumpers should attempt to clear the entanglement by following lines out before initiating EPs.
   j. If altitude allows, emergency procedures should proceed only after acknowledgment by others.
      (1) The jumper above can strike the jumper below during a cutaway unless clear or ready for it.
      (2) The jumper below can worsen the situation for the jumper above by cutting away before ready.
   k. If both jumpers are cutting away and altitude permits, the second jumper should wait until the first jumper clears the area below.
   l. The first jumper should fly from underneath in a straight line after opening.
   m. In the event of multiple cutaways and if altitude allows, jumpers should stagger reserve openings to avoid possible canopy collisions.
   n. If in a canopy entanglement with another jumper below 1,000 feet and both canopies are uncontrollable and it appears the canopies cannot be separated in time for a safe landing, it is too low for a safe cutaway and may become necessary at some point for one or both jumpers to just deploy their reserves instead.
   o. If both jumpers are suspended under one flying canopy at a low altitude, it may become necessary to land with only that canopy.
3. Read and discuss tree landing avoidance with a USPA Instructor:
   a. Avoid trees by carefully spotting clear of large areas of trees or other obstacles covering more than 32,292 square feet, opening high enough to clear them in the event of a bad sport, and planning a good approach pattern for the conditions.
   b. Fly in maximum glide to reach a clear area.
   c. Continue steering to avoid trees but avoid sharp turns near the ground.
   d. Make any low-altitude avoidance turns from braked flight to avoid an equally dangerous dive following a turn from full flight.

4. Review and discuss the USPA recommended emergency procedures for an unavoidable tree landing:
   a. Before landing, steer to face into the wind.
   b. With a ram-air canopy, flare to half brakes and hold the toggles there until tree contact.
   c. Prepare for a hard landing by assuming the PLF body position; often the jumper passes through the tree and lands on the ground.
   d. Protect your body.
      (1) Keep feet and knees tightly together.
      (2) Do not cross your feet or legs.
      (3) Cover and protect your face with your hands while holding both of your elbows tightly together against your stomach to protect your underarms.
   e. Try to steer for the middle of the tree, then hold on to the trunk or main branch to avoid falling.
   f. Most tree landings are survivable, but accidents may also occur during the recovery.
   g. The potential dangers of landing in a tree extend until you are rescued and safely on the ground.
   h. If suspended above the ground, stay in the tree and wait for help to get down. Do not attempt to climb down from a tree without competent assistance from rescue personnel or properly trained drop zone staff.

Canopy

1. Performance-turn initiation and completion with balance:
   a. Enter a turn only as quickly as the canopy can maintain balance (center of lift over the center of load) during the turn.
   b. Surging, lurching, or line twist indicate a turn entered too quickly.
   c. A canopy is more susceptible to collapse from turbulence during entry and exit from a turn.
   d. The canopy dives sharply after a maximum-performance turn.

2. Reverse-turns:
   a. You must know the maximum safe rate of turn entry for each canopy you jump.
   b. Practicing reverse-turns helps you determine the maximum safe toggle turn rate before inducing a line twist.
   c. Make a smooth, but deep, turn at least 90° to the right and then reverse toggle positions smoothly, but quickly, for a 180° turn to the left (four sets recommended to complete Category G).
   d. A line twist at pattern altitudes may be unrecoverable in time for a safe landing, particularly with a higher wing loading.
   e. In case you induce a line twist, you should complete all maximum-performance turns above the 2,500-foot decide-and-act altitude for a cutaway.

3. The potential for collision with other jumpers increases when making performance maneuvers in traffic or near the ground (review):
   a. Other jumpers may be focused more on the target than on traffic.
   b. The lower jumper has the right of way.
   c. It takes only one jumper to avoid a collision.
   d. Jumping a faster canopy requires more attention to traffic.

4. Accumulate two unassisted landings within 65’ of a planned target (total of five required for A-License)
Category G Quiz
(Must be passed before Category G-1 jump.)

1. What is the primary directional control when moving forward to dock in freefall?
   a) Arms  
   b) Legs  
   c) Shoulders

2. What is the minimum break-off altitude for freefall in groups of five or fewer?
   a) 1,500 feet above planned deployment altitude.  
   b) 2,000 feet above planned deployment altitude.  
   c) 1,000 feet above planned deployment altitude.

3. What is the danger of entering a toggle turn too quickly?
   a) Stall  
   b) Line twist  
   c) Line over

4. What does a canopy do after completing a maximum input toggle turn?
   a) It stalls.  
   b) It planes out.  
   c) It dives.

5. What are the three biggest dangers of a hard toggle turn near the ground?
   a) 1: line twist; 2: collision with jumpers; 3: collision with the ground  
   b) 1: stall; 2: collision with jumpers; 3: collision with the ground  
   c) 1: line twist; 2: loss of control; 3: stall

6. What are the first things to do in the event of a collision & entanglement w/another jumper?
   a) Check altitude and establish communication.  
   b) Clear entanglement and check condition of other jumper.  
   c) Cut away and deploy reserve.

7. What is the most critical aspect of closing the main container?
   a) Closing pin loop is as far up the closing pin as possible.  
   b) Bridle routing and placement.  
   c) Orientation of closing pin.

8. Why is it a bad idea to drag the harness and container system when stowing the lines?
   a) Foreign objects could be caught in the lines.  
   b) It causes unnecessary wear on the three-ring release webbing and loops.  
   c) Harness and container fabric colors will fade faster.

9. When Velcro is used on the brake system, why is it a good idea to place your toggles back on the Velcro after you land?
   a) It covers the hook Velcro, which can damage other components, and prevents tangles.  
   b) It regenerates the Velcro mechanism.  
   c) It will prevent future brake fires.
10. Who is responsible for maintaining a main parachute system?
   a) The owner of the system
   b) The main parachute manufacturer
   c) An FAA rigger

11. Why is it bad to leave a parachute in the sun?
   a) Ultraviolet rays degrade nylon.
   b) Nylon overheats easily.
   c) The colors will fade prematurely.

12. What damage could occur from storing a parachute for prolonged periods in a car during the summer?
   a) Car exhaust fumes degrade materials.
   b) Nylon retains folds and will not open properly.
   c) Shorter life for AAD batteries, stow band degradation.

13. What happens to Velcro touch fastener when it is used frequently?
   a) It loses tackiness.
   b) Its durability increases.
   c) Nothing.

14. What happens to stiffened tuck flaps that are frequently used?
   a) Distortion
   b) Strengthening
   c) Nothing

15. Who publishes and enforces rules regarding parachute packing and parachute maintenance?
   a) FAA
   b) USPA
   c) Parachute manufacturers

16. What may result if recovering altitude (floating up) under a freefall formation?
   a) Collision with formation, funnel.
   b) Premature AAD fire.
   c) Formation will re-form quicker.

17. What extra consideration is required when wearing an AAD near the open door of an aircraft or when climbing out?
   a) Aircraft’s magnetic field could damage the AAD.
   b) No extra consideration is required.
   c) AAD activation near the open door of an aircraft presents a dangerous situation.

18. Why is it important to remain clear of the area directly above and below others in freefall?
   a) To comply with FAA regulations.
   b) To minimize outcome of accidental AAD activation or other unplanned event.
   c) To maintain clear line of sight with the ground at all times.
19. Why is it important to maintain an automatic activation device to the manufacturer's standards?
   a) To improve their chances for correct operation, to help prevent premature AAD activations, to comply with the law.
   b) To ensure warranty coverage from the manufacturer.
   c) It will not function otherwise.

20. What is the correct response to a canopy entanglement with another jumper below 1,000 feet if it appears the two canopies cannot be separated in time for a safe landing?
   a) Cut away and prepare to PLF.
   b) Cut away and deploy the reserve.
   c) Deploy the reserve.

21. Describe your procedure for landing in trees:
   a) Face into wind, prepare for PLF, flare to half brakes, protect face & underarms, and wait for help.
   b) Cut away 5-10 feet above top of trees, PLF.
   c) Use any maneuver necessary to avoid landing in trees.

22. What does a tall cumulus cloud indicate?
   a) Calm weather
   b) Thunderstorms in the area
   c) High temperatures

23. What is the most dangerous part of an incoming front for aircraft and skydivers?
   a) Thunderstorms in the gust front; rapid and significant changes in winds.
   b) Colder temperatures.
   c) Higher barometric pressure can damage altimeters and AADs.

---

**Advancement Criteria**

**Aircraft and spotting**
- Spot the aircraft, including all procedures, without assistance.

**Exit and Freefall**
- Two re-docks from ten feet without assistance
- Two re-docks requiring an adjustment in fall rate
- Break off at the planned altitude without prompting
- Track at least 50 feet within ten degrees of the planned heading

**Canopy**
- Four maximum-performance reverse canopy turns (two right and two left)
- Two unassisted landings within 65 feet of the target (jumps from previous categories count toward accuracy requirements)

**Equipment**
- One complete pack job without assistance
Category G Dive Flows
One AFF Instructor or USPA Coach

**G-1 Freefall Dive Flow**
- Perform all spotting procedures without assistance
- Coach observes the spot to ensure safety.
- Review front float exit position until successful.
- Check in and initiate count after coach OK.
- Face direction of flight until stable (2-3 seconds).
- Coach moves into position and docks.
- Check altitude and receive nod from coach.
- Move backward five feet and stop.
- Coach adjusts levels as necessary.
- Check altitude and receive nod from coach.
- Move forward & stop within arm’s reach. No grips.
- Coach adjusts levels as necessary.
- Check altitude and receive nod from coach.
- Move backward ten feet and stop.
- Coach adjusts levels as necessary.
- Check altitude and receive nod from coach.
- Move forward and stop with arm’s reach. No grips.
- Coach adjusts levels as necessary.
- Check altitude every five seconds or after each maneuver, whichever comes first.
- Repeat forward and backward movement, increasing distance in 5’ increments until 6,000 ft.
- Shake head, “No more maneuvers,” at 6,000 feet.
- Initiate break-off at 5,500 feet.
- Turn 180° away from coach & track for 5 seconds.
- Coach remains in place and evaluates track.
- Wave off at 4,000 feet.
- Pull by 3,500 feet.

**G-2 Freefall Dive Flow**
- Same as G-1 dive flow, except with docks added.

**Category G Canopy Dive Flow**
(Same dive flow for all jumps.)
- Check altitude, position, and traffic.
- Correct any common canopy problems.
- Release brakes, conduct a canopy controllability check, and move to the holding area.
- Check altitude, position, and traffic.
- Make a smooth, deep, sharp, balanced 90° R turn.
- Smoothly, but quickly & aggressively, reverse the toggle position and make a balanced 180° L turn.
- Check altitude, position, and traffic.
- Repeat to no lower than 2,500’, in case of twists.
- Coach measures the student’s landing distance from a planned target.

**G-3 Freefall Dive Flow**
- Perform all spotting procedures without assistance
- Coach observes the spot to ensure safety.
- Review rear float exit position until successful.
- Check in and initiate count after coach OK.
- Face direction of flight until stable (2-3 seconds).
- Coach moves into position and docks.
- Check altitude and receive nod from coach.
- Move backward five feet and stop.
- Check altitude and nod if still above 5,500 feet.
- Coach increases fall rate.
- Remain in position and match coach’s fall rate.
- Check altitude and nod if still above 5,500 feet.
- Coach slows fall rate.
- Remain in position and match coach’s fall rate.
- Check altitude every five seconds or after each maneuver, whichever comes first.
- Repeat until response is quick and accurate.
- Shake head, “No more maneuvers,” at 6,000 feet.
- Initiate break-off at 5,500 feet.
- Turn 180º away from coach & track for 5 seconds.
- Coach remains in place and evaluates track.
- Wave off at 4,000 feet.
- Pull by 3,500 feet.

**G-4 Freefall Dive Flow**
- Perform all spotting procedures without assistance
- Coach observes the spot to ensure safety.
- Review rear float exit position until successful.
- Check in and initiate count after coach OK.
- Face direction of flight until stable (2-3 seconds).
- Coach moves into position and docks.
- Check altitude and receive nod from coach.
- Move backward ten feet and downward five feet.
- Check altitude and receive nod from coach.
- Move upward 5’ and forward 10’ to dock on coach.
- Check altitude and receive nod from coach.
- Move backward ten feet and upward five feet.
- Check altitude and receive nod from coach.
- Move downward 5’ & forward 10’ to dock on coach.
- Check altitude and receive nod from coach.
- Repeat until response is quick and accurate.
- Initiate break-off at 5,500 feet without prompting.
- Turn 180° away from coach & track for 5 seconds.
- Coach remains in place and evaluates track.
- Wave off at 4,000 feet.
- Pull by 3,500 feet.
Category H
Four jumps

The last category of the ISP finishes preparing you for the USPA A-License so you can supervise yourself as an independent skydiver. These are the last jumps where you require USPA Instructor supervision. Next, you take your test.

Freefall skills combine gross movements using the start and stop principle to swoop toward a position in the sky relative to another jumper, followed by the fine movements to safely dock that you learned in Category G. The freefall briefing includes a discussion on safety and the importance of recognizing and controlling formation approach speeds. You will also learn to look around while tracking, signaling for pull, and during deployment.

Under canopy, students with sufficient upper body strength explore the use of the front risers. The instructor explains the benefits and dangers of front-riser maneuvers. The discussion includes how to recover from a turn made too low, one of the sport's biggest killers. Emergency procedure review covers unintentional water landings. You should be able to demonstrate how to maintain the three-ring release system and replace a main container closing-loop, two common owner operations.

Although A-license holders are not qualified for demonstration jumps, you will be authorized to jump off the regular DZ into landing areas meeting the BSRs for students and A-license holders. In this last category as a formal skydiving student, you will study the FAA requirements for jumps into the airspace over a private field, including what additional approvals may be necessary for the jump aircraft. This discussion should be with a jump pilot who can discuss those sections of FAR 105.

Learning and Performance Objectives

- Diving exit
- Swooping
- Break off
- Front riser control
- Water landing review
- Owner maintenance of gear
- Aircraft radio requirements
- FAA notification requirements for jumping
- FAA approvals for jump planes

Rules and Recommendations

Review all the Rules and Recommendations sections for each category to prepare for the oral quiz given as part of the USPA A-License check dive.

Equipment

1. Owner maintenance of three-ring release system:
   a. Disassemble the system every month to clean the cable and massage the ends of the risers.
      (1) Nylon riser webbing develops a memory, especially when dirty.
      (2) When disassembled, twist and massage the nylon webbing around the two riser rings.
   b. Clean the cables:
      (1) Most three-ring release cables develop a sludge-like coating that causes them to bind, increasing the required pull force.
      (2) Refer to the manufacturer's instructions for cleaning.
2. Use the correct stow bands for each type of lines:
   
   a. Smaller lines require the smaller bands.
   b. Larger bands may be required for larger lines.
   c. Line stow bands should grasp the line stow bights tightly, resulting in six-11 lbs. of force to extract.
   d. Replace each stow band as it stretches, wears, or breaks.

3. Main closing loop:
   
   a. Damage greater than ten percent warrants replacement.
   b. Tension:
      1. Tension must be sufficient to keep the container closed in freefall.
      2. The closing pin should require eight to 11 pounds to extract (or check owner's manual).
      3. A loose closing loop could result in a premature deployment.
      4. Free-flying maneuvers increase the importance of closing system security.
      5. Adjust the closing loop tension by moving the overhand knot or replacing the loop with the knot tied in the correct place.
   c. Use only closing loop material approved by the harness and container manufacturer.

Spotting and Aircraft

1. Overview of aircraft radio use requirements:
   
   a. The jump aircraft must have an operating radio for jumping to take place.
   b. The pilot must be in contact with air traffic control prior to jumping.
   c. Skim through the FAA's requirements for radio use for jump operations in FAR 105.13 below:
      1. Except when otherwise authorized by air traffic control:
         a. No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft, in or into controlled airspace unless, during that flight:
            1. The aircraft is equipped with a functioning two-way radio communication system appropriate to the air traffic control facilities being used; and
            2. Radio communications have been established between the aircraft and the air traffic control facility having jurisdiction over the affected airspace of the first intended exit altitude at least five minutes before the parachute operation begins. The pilot in command must establish radio communications to receive information regarding air traffic activity near the parachute operation.
         b. The pilot in command of an aircraft used for any parachute operation in or into controlled airspace must, during each flight:
            1. Continuously monitor the appropriate frequency of the aircraft's radio communications system from the time radio communications are first established between the aircraft and air traffic control, until the pilot advises air traffic control that the parachute operation has ended for that flight.
            2. Advise air traffic control when the last parachutist or object leaves the aircraft.
      2. Parachute operations must be aborted if, prior to receipt of a required air traffic control authorization, or during any parachute operation in or into controlled airspace, the required radio communications system is or becomes inoperative.

2. FAA notification required before a jump:
   
   a. A jumper or the pilot must notify the appropriate air traffic control facility at least one hour prior to jumping (no more than 24 hours prior) in most airspace.
   b. Some drop zones have a written notification renewed annually for that location only.
c. Skim through FAR 105.25 and 105.15 for rules on notifications and authorizations prior to jumping:

(1) No person may conduct a parachute operation, and no pilot in command of an aircraft may allow a parachute operation to be conducted from that aircraft:
   (a) Over or within a restricted area or prohibited area unless the controlling agency of the area concerned has authorized that parachute operation;
   (b) Within or into a Class A, B, C, D airspace area without, or in violation of the requirements of, an air traffic control authorization issued under this section;
   (c) Within or into Class E or G airspace area unless the air traffic control facility having jurisdiction over the airspace at the first intended exit altitude is notified of the parachute operation no earlier than 24 hours before or no later than one hour before the parachute operation begins, except as provided below:
      1. For these purposes, air-traffic control facilities may accept a written notification from an organization that conducts parachute operations and lists the scheduled series of parachute operations to be conducted over a stated period not longer than 12 calendar months. The notification must contain the information prescribed below, identify the responsible persons associated with that parachute operation, and be submitted at least 15 days, but not more than 30 days, before the parachute operation begins. The FAA may revoke the acceptance of the notification for any failure of the organization conducting the parachute operations to comply with its requirements.
      2. This section does not apply to a parachute operation conducted by a member of an Armed Force within a restricted area that extends upward from the surface when that area is under the control of an Armed Force.

(2) Each request for a parachute operation authorization or notification required under this section must be submitted to the air traffic control facility having jurisdiction over the airspace at the first intended exit altitude and must include the information prescribed below.

(3) Each person requesting an authorization and each person submitting a notification must provide the following information (on an individual or group basis):
   (a) The date and time the parachute operation will begin.
   (b) The radius of the drop zone around the target expressed in nautical miles.
   (c) The location of the center of the drop zone in relation to--
      1. The nearest VOR facility in terms of the VOR radial on which it is located and its distance in nautical miles from the VOR facility when that facility is 30 nautical miles or less from the drop zone target; or
      2. The nearest airport, town, or city depicted on the appropriate Coast and Geodetic Survey World Aeronautical Chart or Sectional Aeronautical Chart, when the nearest VOR facility is more than 30 nautical miles from the drop zone target.
   (d) Each altitude above mean sea level at which the aircraft will be operated when parachutists or objects exit [sic] the aircraft.
   (e) The duration of the intended parachute operation.
   (f) The name, address, and telephone number of the person who requests the authorization or gives notice of the parachute operation.
   (g) The registration number of the aircraft to be used.
   (h) The name of the air traffic control facility with jurisdiction of the airspace at the first intended exit altitude to be used for the parachute operation.

(4) Each holder of a certificate of authorization issued under this section must present that it for inspection upon the request of the Administrator or any Federal, State, or local official.

(5) Each person requesting an authorization under this section and each person submitting a notice under this section must promptly notify the air-traffic control facility having jurisdiction over the affected airspace if the proposed or scheduled parachute operation is canceled or postponed.
d. Study the overview of notification & authorization requirements from AC 105.2, Appendix 1 below:

<table>
<thead>
<tr>
<th>Location of Jump</th>
<th>Kind of Authorization Required</th>
<th>When to Apply or Notify</th>
<th>Where to Apply or Notify</th>
<th>Title 14 CFR Section Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over or onto any airport</td>
<td>Prior approval</td>
<td>Prior to jump</td>
<td>Airport management</td>
<td>§ 105.23</td>
</tr>
<tr>
<td>In or into Class E or G airspace</td>
<td>Air Traffic Control (ATC) notification</td>
<td>Between 24 hours and 1 hour prior to jump</td>
<td>ATC facility having jurisdiction</td>
<td>§ 105.25</td>
</tr>
<tr>
<td>In or into Class A, B, C or D airspace</td>
<td>ATC authorization (Verbal authorization normally issued)</td>
<td>Prior to jump</td>
<td>ATC facility having jurisdiction</td>
<td>§ 105.25</td>
</tr>
<tr>
<td>Over or within a restricted or prohibited area</td>
<td>Prior authorization</td>
<td>Prior to jump</td>
<td>Controlling agency, as noted on section chart</td>
<td>§ 105.25</td>
</tr>
<tr>
<td>Over or into a congested area or open air assembly of persons</td>
<td>FAA Form 7711-1, Certificate of Authorization</td>
<td>10 working days prior to jump</td>
<td>Flight Standards District Office (FSDO) having jurisdiction over the area where jump is to be made</td>
<td>§ 105.21</td>
</tr>
</tbody>
</table>

3. Aircraft approved for flight with door removed:
   a. Some aircraft are unsafe for flight with the door open or removed.
   b. Aircraft approved for flight with the door removed may require additional modifications and usually require additional FAA field approval.
   c. Other modifications to a jump aircraft, e.g., in-flight doors, handholds, or steps, require additional field approval or a supplementary type certificate.
   d. Review with the pilot the certificates of approval for modifications on the jump aircraft.
   e. Skim through AC 105.2, Appendix 2 (operation of aircraft approved for flight with door removed or modified for parachuting operations) below:
      1. Operating Limitations: Contact your local Flight Standards District Office (FSDO) for information on getting an authorization to operate your aircraft with the door removed and/or a door modified to open/close in flight. Aircraft that have approved procedure and operating limitations in their FAA-approved Aircraft Flight Manual (AFM) or a FAA-approved Supplemental Type Certificate (STC) may operate in accordance with those documents.
      2. Operation with Modified or Removed Door. Any aircraft type, utility/normal category model that has had FAA-approved data used for skydiving operations or door removal can be considered.
         a. Required Data. It is the responsibility of the applicant to supply the FAA aviation safety inspector (ASI) with any data necessary to have his or her aircraft approved to operate with a door removed or a door modified to open/close in flight during jump operations. If the aircraft is altered and operated in accordance with an STC, no other limitations are required.
         b. Approved Data. Many aircraft have jump door and/or restraint systems approved by type certificate (TC), STC, or field approval. Aircraft that have not been FAA-approved by TC, STC, or field approval must have the required data to address the alteration from a Designated Engineering Representative (DER), Organization Designation Authority (ODA), or other FAA-approved data. This data will allow the owner/operator the ability to apply for a field approval or one-time STC for that aircraft.
         c. Previously Approved Field Approvals. Applicants can present a previously FAA-approved field approval for jump door, handles, step, and skydiver restraint systems as data for the field approval process if the FAA-approved data are for the same aircraft make, model, and series (M/M/S).
Exit and Freefall

1. Diving exit:
   a. Position yourself in the door to place your hips and chest into the air coming from ahead of the aircraft, with your body oriented side-to-earth.
   b. Exit in a neutral body position to arrest your forward throw from the aircraft, which is moving you away from your coach.
   c. Before starting to dive, hold the neutral body position for two to three seconds while slowly turning toward your coach.
   d. Use a delta position to begin diving toward your coach.

2. Using your spine to adjust dive angle:
   a. Initiate the swoop with your legs fully extended.
   b. Follow the person ahead closely, but be prepared to slow rapidly.
   c. Pitch up or down by curving your spine to increase or flatten the angle of the dive.
   d. Use fast- and slow-fall technique to adjust vertical position relative to the diver ahead.
   e. For safety and to prevent a collision, dive with an escape path in mind.

3. Traffic on approach to the formation:
   a. Dive in a straight line.
   b. Prevent collisions by watching for other jumpers while on approach to the formation.

4. Start, coast and stop:
   a. Once you are about halfway to the target, return to a more neutral position.
   b. You can increase your speed to the target if you find you have slowed too soon.
   c. Use a flare position (arms forward) to slow and stop at a position level and 10-20 feet away from the target; visual cues:
      (1) Back of pack in view: approaching too high.
      (2) Front of harness in view: approaching too low.
   d. Begin a level approach using legs only.
   e. Remain aware of traffic to each side and for errant jumpers below the approach path.

5. Rapidly arresting forward movement (very effective):
   a. Extend both arms forward.
   b. Use slow-fall technique (cup sternum and abdomen).
   c. Drop both knees.

6. Breaking off and tracking:
   a. Plan the break-off altitude to be high enough for the jumper with the least experience to track to a safe distance from the formation, at least 100 feet for groups of five or fewer. This is also the minimum distance required to pass the A-License check dive.
b. Breakoff:
   (1) The minimum breakoff altitude recommendations for group freefall apply to very experienced
   formation skydivers jumping at a familiar location, using familiar equipment, and jumping with
   familiar people. (SIM Section 6-1) The minimum breakoff altitude for group freefall should be:
   (a) For groups of five or fewer, at least 1,500 feet higher than the highest planned deployment
   altitude in the group (not counting one camera flyer)
   (b) For groups of six or more, at least 2,000 feet higher than the highest planned deployment
   altitude in the group (not counting a signaling deployment or camera flyers)
   (c) Higher than these recommendations for the following:
      1. Groups with one or more jumpers of lower experience
      2. Jumpers with slower-opening or faster-flying canopies
      3. Jumpers engaging in freefall activities that involve a fall rate faster than belly to earth
         terminal velocity
      4. Jumps involving props, toys, or other special equipment, such as signs, banners, smoke,
         flags, hoops, tubes, items released in freefall, etc.
      5. Taking place over an unfamiliar landing area or in case of an off-field landing (bad spot
         recognized in freefall)
      6. Other special considerations
   (d) If any of these conditions are met, add 500 feet to 1,000 feet to your planned breakoff.

c. Develop techniques to scan and steer clear of other jumpers ahead and below.
d. Look left, right, up, and down for other jumpers in the immediate area during the wave-off to
   ensure that the area is clear.
e. Continue looking during deployment so you can steer clear under canopy as soon as it opens.

**Emergency Procedure Review**

1. Refer to SIM Section 6-5 for "Water Landing Recommendations"

2. Water hazards:
   a. Definition of a water hazard:
      (1) An open body of water is defined as a body of water in which a skydiver could drown.
   b. Flotation gear/devices:
      (1) Are required for all skydivers wearing a round main or reserve canopy and all solo students
      when the intended exit, opening, or landing point is within one mile of an open body of water
      (2) Are recommended for jumpers using ram-airs when jumping within a mile of water
   c. Adjust the planned spot to avoid bodies of water.

3. Review and discuss the emergency procedures for an unintentional water landing (SIM Section 5-1.F):
   a. If possible, land close to shore or to a boat, buoy, or other floating object.
   b. Activate or inflate the flotation device, if available.
   c. Disconnect the chest strap to facilitate getting out of the harness after landing in the water (keep
      your hands in the steering toggles to maintain control if possible, however this may require taking
      your hands out of the steering toggles first).
   d. Disconnect the reserve static line (if applicable) to reduce complications in case the main needs to
      be cut away after splashing down.
   e. Steer into the wind.
   f. Loosen the leg straps slightly to facilitate getting out of the harness after splashing down.
      (1) If you loosen the leg straps too much, you may not be able to reach the toggles.
      (2) Leave the leg straps fastened until you have landed and your feet are in the water.
g. Releasing the main canopy and attempting to fall away into the water is not recommended.
   (1) Altitude above water can be difficult to judge.
   (2) Falling from a significant height into water can result in fatal injuries.
   (3) The water may be shallow or there may be unseen objects below the surface.

h. Prepare for a PLF.

i. Flare the parachute to half brakes at ten feet above the water (this may be difficult to judge, due
   to poor depth perception over the water)

j. Enter the water feet-first in a PLF position with your lungs fully filled with air.

k. After entering the water, throw your arms back and slide forward out of the harness.

l. Disconnect or slide off the leg straps.
   (1) Remain in the harness and attached to the canopy until actually in the water.
   (2) If cutting away (known deep water only), do so only after both feet contact the water.
   (3) If flotation gear is not used, separation from the equipment is essential.
   (4) The container can also serve as a flotation device if the reserve canopy is packed in the
       container.
   (5) Caution must be used to avoid the main canopy suspension lines if the reserve container is
       used for flotation.
   (6) Tests have shown that a container with a packed reserve will remain buoyant for up to 45
       minutes or longer.

m. Dive down deep and swim carefully away upwind (if no current) or upstream (if there is a flowing
   current) and swim out from under the collapsed canopy to avoid entangling in the suspension lines.

n. If the canopy lands on top of you or you become covered by the canopy:
   (1) Dive down deep and swim out from under the collapsed canopy, or
   (2) Pull the canopy off your head by following one of the rib seams to the edge of the canopy until
       clear of it, remaining clear of the lines.

o. In swift or shallow water, pull one toggle in or cut away if you landed under your main canopy.

p. Take a deep, full breath of air and refill your lungs at every opportunity.

q. Remove any full coverage helmets in the event of breathing difficulties.

r. Even if you are in shallow water or are a strong swimmer, leave the parachute system behind.

4. Study USPA recommendations on recovery from a turn made too low (SIM Section 5-1.I):

   a. Low turns under canopy are one of the biggest causes of serious injury and death in skydiving.
   b. A low turn can be premeditated or result from an error in judgment or experience with a situation.
   c. To avoid low turns, fly to a large, uncrowded landing area free of obstacles and:
      (1) Fly a planned landing pattern that promotes a cooperative traffic flow.
      (2) If landing off field, plan a landing pattern by 1,000 feet.
   d. Once a jumper realizes that a turn has been made at an unsafe altitude:
      (1) Stop the turn.
      (2) Use toggle control to get the canopy back overhead.
      (3) Prepare for a hard landing (PLF).
      (4) Manage the speed induced by the turn.
         (a) Expect more responsive flare control with the toggles due to the increased airspeed.
         (b) Expect a longer, flatter flare.
   e. In case of premature contact with the ground, no matter how hard, keep flying the canopy to
      reduce further injury.
Canopy

1. Using front risers:
   a. Front risers may be used to dive the canopy:
      (1) To lose altitude rapidly
      (2) To maintain position over ground in strong winds
      (3) To catch up with another jumper under canopy below
      (4) To have fun
   b. Heading control with front risers depends on:
      (1) Airspeed
      (2) The rate of turn
      (3) The speed of turn entry
   c. Heading control with front risers takes practice to become predictable.
   d. Practice heading control with front-risers:
      (1) Pull both front risers down to dive straight ahead.
      (2) Pull one front riser to complete two 90-degree and two 180-degree turns.
   e. Initiate a sharp, deep front-riser turn, raise the riser slightly to decrease the turn rate, and then pull the riser fully down again to attempt to increase the rate of the turn:
      (1) The rate of turn may not increase.
      (2) The resistance on the riser may make it too difficult to pull the riser down farther after raising it.
      (3) This exercise demonstrates the different nature of front-riser heading control.
   f. Complete all front-riser maneuvers by 1,500 feet.

2. Front riser safety:
   a. Watch for traffic below and to the sides prior to initiating a front-riser dive.
   b. Front riser maneuvers can be very dangerous near the ground:
      (1) Turbulence may affect canopy heading or descent rate.
      (2) A mishandled front-riser turn can lead to an undesirable heading, e.g., towards an obstacle, without time to complete the turn safely before landing.
      (3) A crowded landing pattern is never the place for high-speed maneuvers.
   c. Keep both steering toggles in hand when performing front-riser maneuvers to make heading changes more reliably and quickly if necessary.

3. Perform the remaining unassisted landings within 65 feet of the planned target to meet the USPA A-license requirements. (Total of five required for A-license).
Category H Quiz  
(Must be passed before Category H-1 jump.)

1. **Why is it important to look ahead during a swoop toward other jumpers in freefall?**
   a) To maximize your speed  
   b) To maintain heading  
   c) To see others and avoid a collision

2. **What is the fastest way to slow down from a freefall swoop approach?**
   a) Aggressive arch  
   b) Neutral body position with arms forward and knees down  
   c) Arms back at waist and legs straight

3. **What is the danger of a loose or worn main container closing-loop?**
   a) Premature deployment  
   b) AAD fire  
   c) Line over malfunction

4. **Why must three-ring release cables be cleaned periodically?**
   a) Oxidation will cause microscopic burrs on metal, which could tear fabric.  
   b) To remove tar.  
   c) Corrosion deposits cause them to bind.

5. **If you see that you have begun to turn too low to the ground for a safe landing, what should be your first response?**
   a) Quickly use toggle controls to turn in the opposite direction.  
   b) Neutralize the turn and get the canopy overhead.  
   c) Prepare to PLF.

6. **What effect does pulling on the front risers have on the canopy?**
   a) Dramatic increase in rate of descent  
   b) Dramatic decrease in rate of descent  
   c) Dramatic increase in forward speed

7. **When performing front riser maneuvers, what should you do with the toggles?**
   a) Stow them.  
   b) Keep them away from the front risers.  
   c) Keep them in your hands.

8. **What are the two biggest dangers of front-riser maneuvers near the ground?**
   a) Collisions with other jumpers and collision with the ground  
   b) Broken lines and collision with the ground  
   c) Canopy stalls and collision with the ground

9. **What are some of the possible results of a turn made too low to the ground?**
   a) Horseshoe malfunction  
   b) Serious injury or death  
   c) Increased chance of landing on target
10. **What is the procedure for landing in water?**
   a) Inflate flotation device, disconnect chest strap and RSL, prepare for PLF, face into wind, flare, hold breath, cut away once feet are wet, remove leg straps, swim upwind; if under the canopy, dive deep and swim away or follow one seam until out from underneath.
   b) Inflate flotation device, disconnect chest strap and RSL, prepare for PLF, face into wind, flare, hold breath, cut away five to ten feet above water, remove leg straps, swim upwind; if under the canopy, dive deep and swim away or follow one seam until out from underneath.
   c) Inflate flotation device, prepare for PLF, face into wind, flare, hold breath, remove leg straps, swim upwind; if under the canopy, dive deep and swim away or follow one seam until out from underneath.

11. **What is the maximum percentage of visible wear allowable on a main closing loop?**
   a) Fifty percent
   b) Twenty-five percent
   c) Ten percent

12. **Can a jump be legally made from an aircraft without an operating radio?**
   a) No
   b) Yes
   c) Yes, as long as the aircraft has an operating GPS system

13. **What is the least notification the FAA requires before any jump or series of jumps may be made?**
   a) Twenty-four hours
   b) One hour
   c) One month

14. **Where can a pilot look to determine if a plane is approved for flight with the door removed?**
   a) No approval is needed
   b) AC 105.2, Appendix 2, or aircraft owner's manual
   c) FAR 105.3

15. **Whose name will the FAA require when filing a notification for parachute jumping?**
   a) The person giving notice
   b) The local safety and training advisor
   c) The pilot
Category H Dive Flows
One AFF Instructor or USPA Coach

**Freefall Dive Flow**
(Same for all four jumps)
- Dive from the door one second after the coach.
- Present belly to wind in a neutral body position and maintain it for two seconds.
- Coach establishes fall rate and holds heading.
- Turn toward coach.
- Dive and stop level ten to 20 feet out.
- Check altitude before and after every maneuver or every five seconds, whichever comes first.
- Approach and take grips.
- Altitude permitting, coach dives to a point 50 to 100 feet laterally and 20 to 40 feet below.
- Follow and repeat docking procedure.
- Initiate breakoff at 5,000 feet without prompting.
- Turn 180° away from coach & track for 5 seconds.
- Coach remains in place and evaluates track.
- Wave off by 3,500 feet (must do so to pass).
- Deploy by 3,000 feet (must be stable to pass).

**Canopy Dive Flow**
- Check altitude, position, and traffic.
- Correct any common canopy problems.
- Release brakes, conduct a canopy controllability check, and move to the holding area.
- Perform an on-heading front riser dive (keep toggles in hands).
- Check altitude, position, and traffic.
- Look right and perform a 90° right front riser turn (keep toggles in hands).
- Check altitude, position, and traffic.
- Look left and perform a 90° left front riser turn (keep toggles in hands).
- Look right and perform a 180° right front riser turn (keep toggles in hands).
- Look left and perform a 180° left front riser turn (keep toggles in hands).
- Check altitude, position, and traffic.
- Look right and initiate a sharp, deep right front-riser turn, raise it back up halfway to decrease the turn rate, and then pull the riser fully down again to begin the turn again in attempt to increase the rate of the turn (keep toggles in hands).
- Complete all front riser maneuvers by 1,500 feet.
- Follow planned pattern over landing area or alternate.
- Prepare to PLF and flare to land.
- Coach measures your landing distance from a planned target.

---

**Advancement Criteria**

**Exit and Freefall**
- Two swoop and docks with minimum assistance
- Break off at the planned altitude without prompting
- Track 100 feet within ten degrees of the planned heading

**Canopy**
- Two cumulative 90-degree front-riser turns
- Two cumulative 180-degree front-riser turns
- Total of five unassisted landings within 65 feet of the target (A-license requirement)

**Equipment**
- Disassemble, perform owner maintenance, and reassemble three-ring release system
- Remove, adjust, and replace a main container closing loop
USPA A-License Exam Guidelines

1. The examining USPA Instructor conducts a 40-question written USPA-developed A-license exam & an oral quiz of at least 20 questions taken from the USPA Integrated Student Program syllabus, especially the “Rules and Recommendations” & “Book Stuff” sections of the SIM, with emphasis on the following:
   a. cloud clearance and visibility requirements (table in FAR 105.17)
   b. equipment operation and maintenance (SIM Section 5-3)
      (1) wing loading and its effects (SIM Section 4, ISP Category C, B.1; and SIM Section 5-3.B)
      (2) closing loop (SIM Section 4, ISP Category H, D.3)
      (3) Velcro and tuck flaps (SIM Section 4, ISP Category G, D.1)
      (4) packing and authorization to pack (FAR 105.43.a and .b)
      (5) maintaining automatic activation devices (FAR 105.43.c)
   c. canopy flight (SIM Section 6-10)
      (1) traffic patterns and collision avoidance (SIM Section 5-1.H)
      (2) braked turns and obstacle avoidance (SIM Section 5-1.F)
      (3) low turn avoidance and recovery (SIM Section 5-1.I)
      (4) downwind landing procedures (SIM Section 4, ISP Category C, B.7)
      (5) obstacle landing emergency and recovery procedures (SIM Section 5-1.F)
   d. aircraft procedures (SIM Section 5-6)
      (1) during jump run and exit to observe balance limits (SIM Section 5-6)
      (2) distance between groups to maintain separation (SIM Section 5-7.C)
      (3) aircraft emergency procedures (SIM Section 5-1.D)
   e. group freefall and breakoff recommendations (SIM Section 6-1; and SIM Section 6-2.E.5)
   f. parachute emergency procedures (SIM Section 5-1.E)
      (1) deployment malfunctions
      (2) cutaway decide-and-act altitude
      (3) two-canopies-deployed scenarios
   g. accountability for FAR compliance (SIM Section 9-1)
      (1) All sections of FAR Part 91 listed that pertain to skydiving (including .107.A and .211.A)
      (2) FAR 65.125 through .133
      (3) FAR 105

2. The examining USPA Instructor conducts or arranges the review training required for the student to answer all questions correctly.

3. The examining USPA Instructor conducts a skydive with the applicant to verify practical knowledge in the following areas:
   a. choosing the spot and selecting and guiding the pilot to the correct exit and opening point in routine conditions
   b. pre-jump equipment checks for self and others
   c. planning an effective group break-off
   d. right 360, left 360, and a back-loop
   e. docking from 20 feet (evaluator flies into position)
   f. breakoff altitude recognition and tracking for a minimum of 100 feet
   g. signal before deployment and overall awareness during and after deployment
   h. planning and flying a logical landing pattern that promotes a smooth traffic flow and avoids others
   i. packing and preparing equipment for the next jump

4. Once the student has successfully completed the A-license check dive, answered all questions correctly on the oral exam, and passed the written exam with a score of at least 75%, the certifying USPA Instructor may sign the student's A-License Proficiency Card or the approved equivalent and apply the official USPA A-license stamp as proof of license qualification.

5. The card is then considered a valid USPA A-license for a 60-day time period.

6. The completed card must be submitted to USPA Headquarters for processing to be considered a valid license beyond the 60-day time period.
A-License Check-Dive
Must be conducted by an AFF Instructor

- Student spots aircraft and verifies exit point with instructor.
- Exit position optional.
- Demonstrate a 360° turn to the right, a 360° left, and a back-loop.
- Instructor moves 20 feet from the candidate and on level.
- Student docks on instructor.
- Initiate break off by turning 180° away from instructor & track a minimum of 100 feet on heading.
- Wave-off at 3,500 feet and pull by 3,000 feet.
- Follow pre-planned pattern over landing area or alternate.
- Prepare to PLF and flare to land.

Presenting a Completed A-License Proficiency Card

1. The completed A-license Proficiency Card signed by the certifying USPA Instructor and bearing the official A-License stamp is proof of a USPA A-license.
2. An A-License holder may permanently register the license with USPA by sending a copy with the appropriate license registration fee:
   a. Fax both sides of the completed license application to USPA with a credit card authorization.
   b. Photocopy both sides of the completed license application and mail it with payment.
   c. Scan and email a copy of the card to safety@uspa.org
   d. A completed and signed A-License applications need not be stamped to be registered with USPA (USPA keeps a copy of all USPA Instructor signatures on file); however, an A-License Proficiency Card is not considered official unless stamped or until an A-license number is issued.
3. Once a new A-license has been registered with USPA, the applicant will receive a new membership card with the license number, which is also published in Parachutist Magazine.
This official document is your temporary license. Please do NOT send the original to USPA. Send a photocopy or fax the complete original.

Mail photocopy to:
U.S. Parachute Association
5401 Southpoint Centre Blvd.
Fredericksburg, VA 22407

Or fax original to:
(540) 604-9741
### Category F
- Exit and Freefall Date
- Canopy Date
- Emergency Review Date
- Equipment Date
- Spot Date
- Instructor Lice.
- Checklist & jumper log
- Spot within 20 degrees
- Disassemble parachute
- Field test
- Conducting an exit
- Launch with parachute
- Go jump
- Spot
- Canopy
- Emergency review
- Spot
- Instruct

### Category G
- Exit and Freefall Date
- Canopy Date
- Emergency Review Date
- Equipment Date
- Spot Date
- Instructor Lice.
- Checklist & jumper log
- Spot within 20 degrees
- Disassemble parachute
- Field test
- Conducting an exit
- Launch with parachute
- Go jump
- Spot
- Canopy
- Emergency review
- Spot
- Instruct

### Category H
- Exit and Freefall Date
- Canopy Date
- Emergency Review Date
- Equipment Date
- Spot Date
- Instructor Lice.
- Checklist & jumper log
- Spot within 20 degrees
- Disassemble parachute
- Field test
- Conducting an exit
- Launch with parachute
- Go jump
- Spot
- Canopy
- Emergency review
- Spot
- Instruct

### Category I
- Exit and Freefall Date
- Canopy Date
- Emergency Review Date
- Equipment Date
- Spot Date
- Instructor Lice.
- Checklist & jumper log
- Spot within 20 degrees
- Disassemble parachute
- Field test
- Conducting an exit
- Launch with parachute
- Go jump
- Spot
- Canopy
- Emergency review
- Spot
- Instruct

### Prior to freefall self-supervision
- All students must pass the standards listed in the USPA BCP. To achieve freefall self-supervision, students must pass the Freefall Self-Supervision test. This test requires the student to successfully land a jump without the supervision of a USPA instructor. The test must be performed in tandem jumps with a licensed skydive professional acting as an observer.
### Section 4-1—Student Skill and Knowledge Sets

<table>
<thead>
<tr>
<th>Jump Numbers and Supervision</th>
<th>Exit and Freefall</th>
<th>Canopy Flight</th>
<th>Equipment</th>
<th>In-Depth Emergency Review*</th>
<th>Rules and Recommendations</th>
<th>Spotting and Aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFF: 1 (Two Ab) SL/JAD: 1-2 (S/I) Tan: 1 (TI)</td>
<td>Adaptation to skydiving environment; principles of deployment</td>
<td>Steering; intro pattern; wind line; landing procedures</td>
<td>Altimeter and operation handle orientation; instructor gear checks</td>
<td>Passive aircraft emergencies (instructor leads)</td>
<td>FAR 91.107 (seat belts); SIM 2-1 (first-jump course topics)</td>
<td>Propeller avoidance; movement in aircraft</td>
</tr>
<tr>
<td>AFF: 2 (Two Ab) SL/JAD: 3-5 (S/I) Tan: 2-3 (TI)</td>
<td>Relaxed body position; leg awareness; unassisted stable deployment (simulated for SL/JAD)</td>
<td>Assisted pattern; assisted flare; written flight plan; review PLF</td>
<td>Handle operation and protection</td>
<td>Training harness: deployment problems; partial and total malfunctions; stability recovery; altitude awareness</td>
<td>SIM 2-1 (students); SIM 5-1 (malfunctions); FAA AC 90-66A (illustration of aircraft traffic patterns)</td>
<td>Airplane orientation and recognition; runway and approach incursions; aircraft patterns</td>
</tr>
<tr>
<td>AFF: 3-4 (Two AIs, then one) SL/JAD: 6-8 (S/I) Former Tan: 4-5 (AI)</td>
<td>Solo controlled and relaxed fall; heading maintenance; wave-off</td>
<td>Solo pattern and flare; wing loading; turbulence; downwind landings</td>
<td>Complete orientation (main closed); observe pre-flight</td>
<td>Open parachute in aircraft; off-airport landings; obstacle recognition and avoidance; turbulence; collapsing the canopy on landing</td>
<td>SIM 2-1 (student equipment); FAR 105.43 b.1 (equipment); local laws; canopy owner's manual</td>
<td>Pattern selection</td>
</tr>
<tr>
<td>AFF: 5-6 (AI) SL/JAD: 9-12 (S/I) Coach</td>
<td>Solo exit (AFF); heading control; freefall speeds and times</td>
<td>Back-riser control with and without brakes; land-up; 50 meters assisted</td>
<td>Assisted pre-flight; AAD operation; AAD owner's manual</td>
<td>Training harness: routine opening problems; instant recognition and response; building landings</td>
<td>SIM 2-1 (buildings); SIM 5-3 (AADS); FAR 105.17 (clouds)</td>
<td>Jump run observation; looking below for aircraft</td>
</tr>
<tr>
<td>AFF: 7-9 (AI) until cleared from AFF then Coach SL/JAD: 13-15 (S/I) Coach</td>
<td>Door exit aerobatics; unsupervised freefall</td>
<td>Stalls; traffic avoidance; 50 meters unassisted; the &quot;sweet spot&quot; rectangular vs. elliptical</td>
<td>Complete orientation (open canopy); component identification; unassisted pre-flight; comprehensive RSL</td>
<td>Training harness: two canopies; high-wind landings; independent aircraft emergencies</td>
<td>SIM 2-1 (winds); 2-1 L (oxygen); 5-1 (dual deployments); 5-3 (RSLs); 5-3 (alimeters); FAR 91 (pilot responsibilities); FAR 105.43 a and b (packaging authorization and interval)</td>
<td>Aircraft orientation; airspeed; weight and balance; winds aloft; intro spot selection; assist with jump run</td>
</tr>
<tr>
<td>AFF: 10-13 SL/JAD: 16-17 Coach</td>
<td>Tracking: two clear and pulls for former AFF students</td>
<td>Braked turns, approach, and landing; maximum glide; 25 meters on two jumps</td>
<td>Assisted packing; pin checks (others); parachute system and canopy owner's manuals</td>
<td>Power line landings</td>
<td>SIM 2-1 (all); 3-1 (all); 5-1 (power lines); 5-2 (recovery recommendations); 5-7 (group separation); parachute system and reserve owner's manuals</td>
<td>Group separation; assisted jump run; calculating exit point from winds aloft</td>
</tr>
<tr>
<td>AFF: 14-17 SL/JAD: 18-21 Coach</td>
<td>Group exits; forward motion; rate of descent; docking; break-off and separation</td>
<td>Collision avoidance review; reverse turns; 20 meters on two jumps</td>
<td>Solo packing; rigger's responsibilities; maintenance orientation; AAD review</td>
<td>Canopy collision response; tree landings</td>
<td>SIM 5-1 (trees); 5-1 (collisions); SIM 5-5 (weather); 6-1 (group freefall); FAR 105.43 c (AAD maintenance)</td>
<td>Unassisted jump run; weather</td>
</tr>
<tr>
<td>AFF: 18-21 SL/JAD: 22-25 Coach</td>
<td>Diver exit; sweeping; traffic awareness during sweeping tracking and deployment</td>
<td>Front riser control; 20 meters on three jumps</td>
<td>Owner maintenance (three ring, closing loop)</td>
<td>Water landings; low-turn recovery</td>
<td>SIM 5-1. (water); 5-1 (low turns); 6-2 (breakoff); FAR 105.13 (aircraft radio); 105.15 (notification); AC 105-2C App (aircraft)</td>
<td>Notification to FAA of jump activity; review STC, 337, etc.</td>
</tr>
</tbody>
</table>

*After training recommended in the USPA Integrated Student Program for solo students coming from tandem.
Hand Signals

Check Arms (Verify 90° angle at elbow and shoulder)

Extend Legs (4”-6”, slow and smooth)

Bend Legs (4”-6”, slow and smooth)

Circle of Awareness (Check Altitude)

Note: If your instructor(s) is shaking you immediately after exit, Arch and Relax

Relax (Breathe)

Bring Knees Together or Toe Taps

Practice Pilot Chute Touches

Pull (Immediately)
Jumper: Tristan Donley
Photo By: Mike Ashley
The Middletown Regional Airport runway is oriented 050°-230° (NE-SW) and is 6,100 feet in length.
### FREEFALL TIME TABLE

**WITH GIVEN TERMINAL VELOCITY**

<table>
<thead>
<tr>
<th>Exit Altitude (feet) with opening at 3,000'</th>
<th>Length of freefall (feet)</th>
<th>120 mph (horizontal)</th>
<th>160 mph (vertical)</th>
<th>50 mph (wing suit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,500</td>
<td>500</td>
<td>6</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>4,000</td>
<td>1,000</td>
<td>9</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>4,500</td>
<td>1,500</td>
<td>12</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>5,000</td>
<td>2,000</td>
<td>15</td>
<td>12</td>
<td>31</td>
</tr>
<tr>
<td>5,500</td>
<td>2,500</td>
<td>18</td>
<td>14</td>
<td>37</td>
</tr>
<tr>
<td>6,000</td>
<td>3,000</td>
<td>21</td>
<td>16</td>
<td>44</td>
</tr>
<tr>
<td>6,500</td>
<td>3,500</td>
<td>24</td>
<td>16</td>
<td>51</td>
</tr>
<tr>
<td>7,000</td>
<td>4,000</td>
<td>26</td>
<td>18</td>
<td>58</td>
</tr>
<tr>
<td>7,500</td>
<td>4,500</td>
<td>29</td>
<td>23</td>
<td>65</td>
</tr>
<tr>
<td>8,000</td>
<td>5,000</td>
<td>32</td>
<td>25</td>
<td>71</td>
</tr>
<tr>
<td>8,500</td>
<td>5,500</td>
<td>35</td>
<td>27</td>
<td>78</td>
</tr>
<tr>
<td>9,000</td>
<td>6,000</td>
<td>38</td>
<td>29</td>
<td>85</td>
</tr>
<tr>
<td>9,500</td>
<td>6,500</td>
<td>41</td>
<td>31</td>
<td>92</td>
</tr>
<tr>
<td>10,000</td>
<td>7,000</td>
<td>43</td>
<td>33</td>
<td>99</td>
</tr>
<tr>
<td>10,500</td>
<td>7,500</td>
<td>46</td>
<td>35</td>
<td>105</td>
</tr>
<tr>
<td>11,000</td>
<td>8,000</td>
<td>49</td>
<td>38</td>
<td>112</td>
</tr>
<tr>
<td>11,500</td>
<td>8,500</td>
<td>52</td>
<td>40</td>
<td>119</td>
</tr>
<tr>
<td>12,000</td>
<td>9,000</td>
<td>55</td>
<td>42</td>
<td>126</td>
</tr>
<tr>
<td>12,500</td>
<td>9,500</td>
<td>58</td>
<td>44</td>
<td>133</td>
</tr>
<tr>
<td>13,000</td>
<td>10,000</td>
<td>60</td>
<td>46</td>
<td>140</td>
</tr>
<tr>
<td>13,500</td>
<td>10,500</td>
<td>63</td>
<td>48</td>
<td>146</td>
</tr>
<tr>
<td>14,000</td>
<td>11,000</td>
<td>66</td>
<td>50</td>
<td>153</td>
</tr>
<tr>
<td>14,500</td>
<td>11,500</td>
<td>69</td>
<td>52</td>
<td>160</td>
</tr>
<tr>
<td>15,000</td>
<td>12,000</td>
<td>72</td>
<td>55</td>
<td>167</td>
</tr>
<tr>
<td>15,500</td>
<td>12,500</td>
<td>74</td>
<td>57</td>
<td>174</td>
</tr>
</tbody>
</table>
Glossary

A
AAD: (see Automatic Activation Device)
A-License: The first level license which signifies that a skydiver has advanced beyond the student phase. Persons holding a USPA A-License are able to jumpmaster themselves, perform basic group freefall jumps and water jumps, participate in certain USPA collegiate competition events, and pack their own main parachute.
Accelerated Freefall (AFF), USPA: Harness-hold freefall skydiving student training discipline developed under Ken Coleman and adopted by USPA. AFF-rated USPA Instructors accompany the student in freefall during the initial training jumps.
AGL: Above ground level. Refers to altitude, e.g., 5,000 feet AGL.
Aircraft: Any machine or device, including airplanes, helicopters, gliders, balloons, etc., capable of atmospheric flight. For the purposes of regulation, parachutes are not considered aircraft.
Air Speed: The speed of an airborne aircraft or parachute, relative to the air.
Alterations: Any change or modification to any part of the parachute assembly from its original manufacturer’s specifications. (See also Major alteration and Minor Alteration)
Altimeter: A device that measures height above the surface (altitude); for skydivers, typically above the intended skydiving landing area. (See also Audible Altimeter)
Angle of Incidence: The relative pitch (leading edge up or down) angle of a wing measured between the chord line and the horizon.
Angle of Attack: The relative pitch (leading edge up or down) angle of a wing measured between the chord line and the relative wind.
Approach angle: (See glide path)
 Appropriately Rated: adj. Refers to a USPA Instructor or Instructor Examiner rated in the method-specific instructional discipline necessary to perform a particular task in accordance with the BSRs.
Arch: n. Position skydivers use to orient the front of their torso to the relative wind. Described, it is hips forward with back arched; legs extended to 45 degrees, toes pointed; knees at shoulder width; arms bent 90-120 degrees at the shoulders and elbows and relaxed; head up.
Artistic Events: Skydiving competition events that include freeflying, freestyle skydiving, and skysurfing.
AS 8015 (Aerospace Standard 8015): Standard of tests and minimum safety and performance requirements which must be met to receive approval under technical standard order (TSO) certification. AS 8015A, the standard for TSO C-23c was adopted in 1984 to supersede NAS 804, the standard for TSO C-23b. In June, 1994, AS 8015B became the standard for TSO C-23d.
Audible Altimeter: An alarm used by skydivers to alert them about reaching one or more pre-set altitudes.
Auxiliary Parachute: (See reserve parachute.)
Automatic Activation Device (AAD): A self contained mechanical or electro-mechanical device that is attached to the interior of the reserve parachute container, which automatically initiates parachute deployment of the reserve parachute at a pre-set altitude, time, percentage of terminal velocity, or combination thereof. (FAR 105 definition)

B
B-12s: (jar.) Clip hardware sometimes used for leg-strap attachment on a parachute harness. Refers generally to the MS 22044 hardware originally used on the U.S. Army B-12 parachute assembly. (See Thread-Through)
B License: The second level USPA license. Persons holding a USPA B License are authorized to participate in the USPA collegiate 4-way formation skydiving event, perform night jumps, and when qualified, apply for a USPA Coach rating.
Bag: n. (See Deployment Device)
Bag Lock: A malfunction of a deployed parachute where the canopy remains in the deployment bag.
B.A.S.E. Jumping: An activity involving the use of a parachute for descent from fixed objects. The acronym derives from the first initials of four possible launch categories: buildings, antennae, spans (bridges), and earth (cliffs). Because BASE jumping does not meet the FAA’s definition of “the descent of an object to the surface from an aircraft in flight,” it is not regulated by the FAA or addressed by USPA.
Base: 1. When building a freefall or canopy formation, the initial target individual or group of people to which the others fly. 2. Base (leg): The portion of the three-legged landing pattern where the jumper flies across the direction of the wind downwind of the landing area before turning for final approach into the wind toward the target.
Basic Safety Requirements (BSRs), USPA: Minimum standards overseen and published by USPA and generally agreed upon as the acceptable standard for safe skydiving activities. The BSRs form the foundation of self-governing by skydivers. USPA oversees the BSRs.
Belly Flying: (See Flat Flying)
Board of Directors (BOD). USPA: Those representatives elected by the general members of USPA every two years as set forth in the USPA By-Laws; authorized by the by-laws to have general charge and control of the affairs, funds, and property of the organization and to carry out the objectives of the organization and its by-laws; elects officers from among current USPA Board members. The USPA Board of Directors consists of: 1. National Directors—those directors elected at large by the general membership; 2. Regional Directors—those Directors of a specified geographical area, elected by and responsible for representing the interests of the skydivers in a USPA Region; and 3. An ex officio member representing the National Aeronautical Association.
Braked Turn: A turn under an open parachute canopy made by using the steering toggles to slow the forward speed of the canopy and then allow one side to fly slightly faster to change heading. Used to reduce altitude loss in a turn.
Brakes: 1. The steering controls of a ram-air parachute. (See also Toggles) 2. The position of the parachute steering controls, measured in relative increments (quarter brakes, deep brakes, etc.), to control speed and descent in a stable state of flight.
Break off: Procedure in group skydiving where jumpers cease group activity and separate. In freefall, jumpers begin to track at a predetermined altitude for a clear area to open safely; jumpers building canopy formations break off at a predetermined altitude to gain safe separation and allow jumpers to prepare for a landing approach. 2. Act of a group of jumpers separating from a freefall or canopy group.
Break off Altitude: Planned altitude for initiating separation of jumpers during a group jump.
Bridle: The device, usually made of webbing or tape, connecting the pilot chute to the deployment bag or the canopy.
BSRs: (See Basic Safety Requirements, USPA)

C License: The third-level license issued by USPA. USPA C-license holders may apply when qualified for the USPA AFF, IAD, and Static-Line Instructor ratings, ride as passenger on USPA Tandem Instructor training and rating renewal jumps, and participate in intermediate-altitude jumps and open field and level 1 exhibition jumps.
Canopy: The major component of the parachute system comprised of fabric membranes that connect to the parachute harness by suspension lines and provide the means for the jumper to descend safely.
Canopy Formation (CF); Canopy Relative Work (CRW): n. 1. The intentional maneuvering of two or more open parachute canopies in proximity to or in contact with one another during descent. 2. The FAI competition discipline involving the building of canopy formations.
Canopy Release: A device that allows immediate separation of the parachute canopy and risers from the harness.
Cascade: The point where two or more lines of a canopy join into one.
Cell: Chord-wise section of a parachute canopy between the load-bearing ribs. Sometimes, any portion of a canopy separated by vertical ribs.

Certificated: adj. Refers to FAA-approval status of parachute components, technicians (riggers), and aircraft pilots.

Check of Threes: Pre-jump equipment self-check performed in the aircraft: check three-ring release system (and RSL) for correct assembly; check three points of harness attachment for snap assembly or correct routing and adjustment; check three operation handles—main activation, cutaway, reserve—in place.

Chord: The longest dimension from the front to the back of a wing at any given point along the span.

Cleared: adj. Refers to a student who has received a signature from a USPA Instructor to advance.

Climb out: The act of a jumper positioning himself or herself in or near the door or on protuberances or structures outside the aircraft to prepare for launch, usually with a group.

Closing Loop: A lace that when threaded through eyelets in the parachute container flaps and locked with a closing pin, keeps the parachute contained until activation.

Coach: A non-rated operative who provides advanced skydiving training. (See also Coach, USPA)

Coach, USPA: The entry-level USPA instructional rating whose holder may teach the general (non-method-specific sections of the first-jump course) and conduct group freefall skills training and jumps with students, all under the supervision of a USPA Instructor.

Collapsible Pilot Chute: A hand-deployed pilot chute that automatically collapses after deployment.

Collapsible Slider: A slider rigged so the jumper can compress or wrap it to reduce drag (see also Slider).

Container: The portion of the parachute system that closes around and stores the folded parachute canopy and deployment device until deployment.

Cork: (jar.) During high-speed group freefall maneuvers, to lose control and decelerate rapidly. United states parachute association® publications glossary

Cross Braced: Refers to a canopy designed with longitudinal trussing between the vertical ribs to flatten and stiffen the wing in flight.

Cross Connectors: Straps attached between the risers. Used for canopy formation, they should be from front to rear only to prevent the docked jumper from sliding back up the lines. Especially important for plane formations. Also used with some reserve static-line systems and attached from side to side to prevent premature reserve deployment if only one riser is released.

Crossport: A vent cut into the structural rib of a parachute canopy to equalize air pressure between two cells.

Crosswind: Perpendicular to the direction of the wind.

CREW: (See Canopy Formation)

Cutaway: Procedure where the jumper releases from the main parachute prior to activating the reserve parachute. Used in the event of a main parachute malfunction to prevent an entanglement with the deploying reserve; in the event of a canopy entanglement with another jumper; and also in case the wind causes the canopy to drag a jumper after landing.

Cutaway Handle: Pillow or loop handle of a two handled system, normally located on the jumpers right-side chest, used to initiate a cutaway. Sometimes referred to as a three-ring release handle.

D License: The fourth and highest level or license issued by USPA. USPA D-license holders may participate in all competitions at the national level, apply when qualified for all USPA instructional and proficiency ratings, and participate in high-altitude jumps.

Delta: Freefall position with legs extended and arms back to initiate a forward dive.

Demonstration Jump (Demo): (See Exhibition Jump)
Density Altitude: An expression of air density relative to standard atmospheric pressure at sea level. The pilot calculates pressure altitude and temperature and compares the result with an equivalent altitude MSL at standard temperature.

Deployment: After activation, extraction of the parachute from the container and full extension of the system prior to inflation.

Deployment Device: Intermediate container, usually a bag (D-bag) that contains or constricts the folded parachute through complete line deployment.

Descent Rate: The downward horizontal speed of an aircraft or parachute, usually measured in feet per minute.

Diaper: A type of deployment device consisting of a fabric panel attached near the lower part of a canopy which prevents canopy inflation until full line stretch. Used frequently with round parachutes to reduce opening shock and malfunctions.

Direct Supervision: 1. The attentive oversight of an activity taking place in the immediate presence of the supervisor, who is personally responsible for the proper conduct of the activity. (USPA definition) 2. A certificated rigger personally observes a non-certificated person packing a main parachute to the extent necessary to ensure that it is being done properly, and takes responsibility for that packing. (FAR 105 definitions) (see also Supervision)

Dive Blocks: Hand grips (not loops) on the front risers to facilitate diving the canopy.

Dive Loops: Handles on the front risers to facilitate diving the canopy.

Diver Exit: Leaving an aircraft by diving out of the aircraft door; made without positioning or bracing to achieve a stable entry into the airstream.

Dock: To make physical controlled contact with another skydiver while in freefall; or, when building canopy formations, with another jumper's canopy.

Door Exit: (See Diver Exit)

Downwind: 1. The direction toward which the air is moving. 2. Positioned farther along the wind's path. 3. A downwind-facing landing.

Downwind Leg: The portion of the landing approach flown with the wind blowing from behind the jumper.

Drogue: A trailing drag device used to retard the movement of an object through the air, used in skydiving to regulate the fall rate of tandem skydivers.

Droguefall: In tandem skydiving, the portion of the descent where a drogue has been deployed between freefall and main parachute deployment.

Drop Zone: 1. Skydiving establishment or intended parachute landing area. (USPA definition) 2. Any predetermined area upon which parachutists or objects land after making an intentional parachute jump or drop. The center point target of a drop zone is expressed in nautical miles from the nearest VOR facility when 30 nautical miles or less; or from the nearest airport, town, or city depicted on the appropriate Coast and Geodetic Survey World Aeronautical Chart or Sectional Aeronautical Chart, when the nearest VOR facility is more than 30 nautical miles from the drop zone. (FAR 105 definition) (See also Sanctioned Drop Zone)

Dual Assembly: Refers to a two-canopy parachute system. Includes the main and reserve canopies, harness and container system, and all other components.

Dummy Ripcord Pull (DRCP): (see Practice Deployment)

Dynamic Stall: An action that occurs following the flare of a ram-air canopy, where the load (jumper) has swung forward under the canopy from the braking action and begins to swing back. (See also Reverse Flight and Stall)

Emergency Parachute: A certificated parachute which is intended for emergency use; typically, the parachute a pilot wears.
End Cell: The last chordwise section of a parachute canopy on either end.
End-Cell Closure: Deflated end cell. Routine opening problem, usually correctable.
Elliptical: Refers to a class of canopies with a tapered or approximately elliptical planform.
Exhibition Jump: An exhibition jump, also called a display or demonstration jump, is a jump at a location other than an existing drop zone done for the purpose of reward, remuneration, or promotion and principally for the benefit of spectators.
Exit Point: The point on the ground over which skydivers leave the aircraft.
Exit Weight: The combined weight of the jumper and all his or her equipment for that jump.
Extraordinary Skydive: Night jump, water jump, jump from above 15,000 feet MSL, exhibition jump, preplanned cutaway jump, and other jumps requiring special equipment and procedures that might be unfamiliar to most jumpers.

F
FAA (see Federal Aviation Administration )
FAI: (see Federation Aeronautique Internationale )
Federal Aviation Regulations (FARs): The parts of the Code of Federal Regulations that apply to aviation.
Federal Aviation Administration (FAA): An agency of the U.S. Department of Transportation whose primary function and responsibility is to control the nation's air traffic, including the certification of all civil aircraft and accessories, licensing of all civil pilots, mechanics, and riggers, and administration of the Federal Aid to Airports Program.
Federation Aeronautique Internationale (FAI): An international organization which governs all aviation sports, certifies all official aviation and space records, and governs official international competitions. Operates through a non-profit National Aero Club in each country.
Final Approach: The final portion of flight before a jumper or aircraft lands.
Flare: 1. v. (Under canopy: To convert the downward speed of a parachute momentarily into lift. 2. v. In freefall: To decelerate prior to approaching a formation. 3. n. The act of flaring. 4. n. A membrane used to distribute the load of a parachute at the line attachment points of some canopies.
Flat Flying: Freefall orientation primarily belly to earth.
Flat Delta: Freefall position with the body on one plane, legs extended and arms swept back, used as a starting or intermediate position when developing a track.
Floater: A jumper positioned outside the aircraft to leave slightly prior to the person or group designated as the target for the initial freefall formation (see also Base). A floater maneuvers from a position below the base relative to the horizon.
Foreign Parachutist: A parachutist who is neither a U.S. citizen nor a resident alien and is participating in parachute operations within the United States using parachute equipment not manufactured in the United States. (FAR 105 definition)
Formation Skydiving (Relative Work): 1. Aerial maneuvers by two or more freefalling skydivers with each other, usually to form geometric formations. 2. Competition discipline of flat-flying.
Freefall: The portion of a parachute jump or drop between aircraft exit and parachute deployment in which the parachute is activated manually by the parachutist at the parachutist’s discretion or automatically, or, in the case of an object, is activated automatically. (FAR 105 definition)
Free Fly: v. To exit unlinked with other jumpers.
Freeflying: n. 1. An unrestricted freefall discipline characterized by varied presentations to the relative wind. (see also Sit Flying and Head Down ) 2. n. The competition event of freeflying.
Freestyle: 1. A solo freefall discipline that involves choreographed multi-orientation static and dynamic maneuvers. 2. The competition event of freestyle performed as part of a team with a camera flyer (freestyle skydiving).

Full Flight: The stabilized state of hands-off canopy flight under an open and fully functioning parachute.
Funnel: n., v. A freefall skydiving formation which has become unstable, usually due to one or more jumpers flying out of position, causing the participants to collapse the formation and land on top of each other.

G
Glide: n., v. The combined horizontal and vertical movement of a descending canopy.
Glide Angle: (see glide path)
Glide Path: The trajectory of a parachute as it descends in flight towards a landing point on the ground.
Go-Around: n. (jar.) An in-flight operation where the aircraft circles at jump altitude.
Governance Manual, USPA: The official bound collection of the USPA Constitution and By-Laws. Ground speed: The speed of an airborne aircraft or parachute relative to the ground it traverses in a given period of time.

H
Hand-Deployed Pilot Chute: A small parachute thrown by hand in freefall to extract the main parachute from its container. (see also PULL OUT and THROW OUT)
Harness: n. The webbing of a parachute system that surrounds and retains a jumper.
Harness and Container System: The major component of a parachute system, usually unitized, which the jumper dons for the jump. It contains the canopies and certain accessory devices.
Harness Hold: A skydiving training discipline where a student is trained for independent, solo freefall but is accompanied by at least one USPA AFF Instructor until meeting the requirements in the BSRs for self-supervision in freefall. On the initial jumps, the AFF Instructor(s) assist the student on exit via a harness grip.
Head Down: adj., adv. Inverted vertical or nearly vertical freeflying orientation.
Hook Kinife: A hook-shaped knife with an inside cutting edge. Used in certain emergencies to sever problem lines or components of a parachute system.
Hook Turn: (jar.) A canopy maneuver that results in a steep dive.
Horseshoe n. A partial parachute malfunction where part of the deployed parachute is entangled with the jumper or his or her equipment.

I
IAD: (see Instructor -assisted deployment)
Instructor, USPA: The holder of a USPA Instructor rating qualified in one or more of four methods of instruction: USPA Accelerated Freefall, instructor-assisted deployment, static line, or tandem. The mid level of the USPA instructional rating hierarchy. A USPA Instructor may train and certify a student for the USPA A-License, supervise USPA Coaches, and is eligible for appointment as USPA Safety & Training Advisor.
Instructor -Assisted Deployment (IAD): A method of passive deployment used for training skydiving students making their initial jumps. A USPA IAD Instructor controls a hand-deployed pilot chute while a student moves into position and jumps, at which point the instructor releases the pilot chute.
Instructor Rating Course, USPA: A course registered with USPA Headquarters to train, qualify, and test applicants for the USPA Instructor rating.
Instructor Examiner (I/E), USPA: The highest level of the instructional rating program. An I/E is an experienced USPA Instructor who has met additional proficiency requirements and passed a series of written examinations on a wide variety of skydiving related subjects. An I/E has all of the privileges of a USPA Safety & Training Advisor.
Instructional Rating Manual (IRM), USPA: The manual containing the collected documents and references required to conduct any course for USPA Coach or USPA Instructor ratings.
**Judge:** The official who evaluates a competitor’s performance. USPA issues judge ratings at both the Regional and National levels. The FAI issues a rating for internationally recognized judges.

**Jump Altitude:** Actual altitude of an aircraft above the ground at the time a skydiver exits.

**Jump Run:** The flight of the aircraft prior to exit, generally following a predetermined path.

**Jumpmaster:**
1. A skydiver, typically a senior jumper or instructional rating holder, who coordinates boarding and exit order, jump flight procedures, spotting, and emergency operations with the pilot.
2. v. To dispatch jumpers.
3. n. Prior to 2002, a USPA instructional rating for supervising student jumps.

**Landing pattern:**
- n. The deliberate flight path, usually rectangular, that a jumper uses in the final phase of descent under canopy.

**Line Dock:** The docking of two canopies with the docker’s canopy above the head of the person receiving the dock.

**License:** Certificate of proficiency recognizing that a skydiver has met a specified level of experience, skill, and knowledge. There are four classes of USPA licenses: A, B, C and D. USPA licenses are recognized internationally through the FAI.

**Line Twist:**
- n. A condition of parachute opening where the canopy has attained full or nearly full inflation but one or more complete twists have developed in the lines and/or risers. Can be dangerous when associated with a spin.
- Lineover: n. A partial malfunction of a deployed parachute resulting in lines going over the top of the canopy. Also refers loosely to the partial inversion of a round canopy. (see also Partial Inversion)

**Mae West:**
- n. (jar., archaic) WWII term for partial inversion. (see also Partial Inversion)

**Main Parachute:** A parachute worn as the primary parachute used or intended to be used in conjunction with a reserve parachute. (FAR 105 definition)

**Maintenance:** Inspection, overhaul, repair, preservation, and replacement of parts.

**Major Alteration:** An alteration not listed in the manufacturer’s specifications that might appreciably affect weight, structural strength, performance, flight characteristics, or other qualities affecting airworthiness or that cannot be done by elementary operations. (see also Alteration)

**Major Repair:** A repair that if improperly accomplished may affect weight, structural strength, performance, flight characteristics, or other qualities which determine airworthiness.

**Malfunction:** The complete or partial failure of a parachute canopy to accomplish proper opening, descent, or flight characteristics.

**Master Rigger:** The higher of two certification levels for FAA riggers. May perform more complex repair tasks and approved alterations. (see also Senior Rigger)

**Mini three-ring:** Refers to a scaled-down version of the original three-ring release system. (see also three-ring release)

**Minor Alteration:** An alteration other than a major alteration. (see also Alteration and Major Alteration)

**Minor Repair:** A repair other than a major repair. (see also Major Repair)

**MSL:** Altitude measured from sea level.

**NAA** (see National Aeronautical Association)
NAS 804: (National Aircraft Standard 804) defines the tests and minimum performance and safety standards which must be met for a parachute to receive approval under TSO C-23b. Adopted in 1949 and superseded in 1984 by AS 8015A.

National Aeronautic Association (NAA): The National Aero Club of the USA which represents the FAI. USPA is a division of the NAA.

National Director: (see Board of Directors).

Night Jump: A skydive made from one hour after official sunset to one hour before official sunrise. The FAA considers any jump made after sunset and before sunrise a night jump requiring equipment specified in FAR 105.

NOTAM (Notice to Airmen): An air traffic advisory or notice filed with an FAA Flight Service Station by an airspace user.

Object: Any item other than a person that descends to the surface from an aircraft in flight when a parachute is used or is intended to be used during all or part of the descent. (FAR 105 definition)

Open Body of Water: A body of water in which a skydiver could drown.

Opening Point: The ground point of reference over which the skydiver opens the parachute.

Opening Shock: (jar.) The decelerating force exerted on the load as the parachute deploys and inflates. Caused by the resistance of the canopy and items associated with it.

Oscillation: 1. The swinging or pendulum motion of the suspended load under a canopy. 2. In canopy formation, the swaying or swinging of a formation caused by poor docking, turbulent air, or too much movement of the people in the formation.

Outboard: Facing to the outside, such as a ripcord facing to the side of the jumper rather than toward the breast bone.

Pack: v. To fold and close a parachute system in preparation for jumping.

Parachute: A fabric device that slows the descent of a falling object; derived from the French words “para,” to shield, and “chute,” to fall. Thus, parachute literally means “to shield from a fall.”

Parachute Drop: The descent of an object to the surface from an aircraft in flight when a parachute is used or intended to be used during all or part of that descent. (FAR 105 definition)

Parachute Jump: A parachute operation that involves the descent of one or more persons to the surface from an aircraft in flight when a parachute is used or intended to be used during all or part of that descent. (FAR 105 definition)

Parachute Landing Fall (PLF): n. A method developed by the U.S. military to minimize the chance of injury from a hard landing under parachute. The jumper distributes the force of the landing in an orderly manner over the most robust areas of the body.

Parachute Operation: The performance of all activity for the purpose of, or in support of, a parachute jump or a parachute drop. This parachute operation can involve, but is not limited to, the following persons: parachutist, parachutist in command and passenger in tandem parachute operations, drop zone or owner or operator, jump master, certificated parachute rigger, or pilot. (FAR 105 definition)

Parachutist: A person who intends to exit an aircraft while in flight using a single-harness, dual parachute system to descend to the surface. (FAR 105 definition) (see also Skydiver)

Parachutist in Command: The person responsible for the operation and safety of a tandem parachute operation. (FAR 105 definition) Not necessarily a USPA instructional rating holder.

Paragliding n. (also Parapente): An activity involving the use of a ram-air inflated wing, resembling a parachute, for gliding. Flights typically initiate by foot-launching from a hill or from a ground-based tow.
Because paragliding jumping does not meet the FAA’s definition of “the descent of an object to the surface from an aircraft in flight,” it is not regulated by the FAA or addressed by USPA.

**Partial Inversion:** Inflation malfunction of a round canopy where one side passes through and inflates between two lines of the other side, resulting in two inflated lobes. (see also Lineover)

**Passenger Parachutist:** A person who boards an aircraft, acting as other than the parachutist in command of a tandem parachute operation, with the intent of exiting the aircraft while in flight using the forward harness of a dual harness tandem parachute system to descend to the surface. (FAR 105 definition)

**Permeability:** The amount or volume of air which can pass through a fabric assembly.

**Pilot Chute:** A small parachute used to initiate and/or accelerate deployment of a main or reserve parachute. (FAR 105 definition)

**Pilot Chute Assist:** A method of rigging a static line to a parachute where the static line opens the container and positively extracts the pilot chute before separating from the system. Typically a velcro strip or break cord of known strength is used.

**Pin 1.** v. To fly to another jumper and take grips on the jumper (freefall) or canopy (canopy formation).

**Pin 2.** n. The first jumper to make contact with the base, or target jumper, to begin a formation.

**Pin 3.** n. Retaining device that when passed through a closing loop, locks the parachute system closed until activation.

**Pin Check:** n. (jar.) Pre-jump inspection of the parachute.

**PLF (see Parachute Landing Fall)**

**Plane:** n. A compressed vertical canopy formation.

**Planform:** The shape or footprint of a wing surface.

**Planing:** v. The act of compressing a parachute stack.

**Poised Exit:** A departure from an aircraft wherein the jumper uses an external structure as a brace to assist in gaining a stable position immediately upon leaving the aircraft.

**Porosity:** The ratio of open area to closed area in a fabric. Graded as high, low, or zero. Tightly woven and treated material has a lower porosity than loosely woven material.

**Practice Deployment:** An in-air exercise used to learn how to locate an operate a parachute deployment handle prior to opening. It may consist of pulling or throwing a practice or dummy handle (instructor-assisted deployment or static-line jumps) or touching the actual deployment handle in freefall or tandem droguefall.

**Premature Opening:** Unintentional opening of a parachute.

**Projected Landing Point:** The expected landing spot on the ground, based on the glide path of the parachute.

**Prop Blast:** 1. n. The airflow created by a propeller that is developing thrust. 2. n. (jar.) relative wind on exit

**Pud** n. (jar.) An aerodynamically low-profile, soft handle that is ergonomically designed to fit into a clenched fist. Used for various parachute operation handles.

**Pull Out:** n. A type of hand-deployed parachute activation system. The jumper pulls a handle connected to the container closing pin and the internally packed pilot chute. (see also Hand Deployed Pilot Chute)

**Pull-up Cord:** A packing aid used to thread the closing loop through eyelets in the container and removed once the closing pin is inserted.

**Ram-Air Parachute:** A parachute with a canopy consisting of an upper and lower surface that is inflated by ram air entering through specially designed openings in the front of the canopy to form a gliding airfoil. (FAR 105 definition)
Rating Renewal Seminar, USPA: A meeting of USPA instructional rating holders to exchange information, introduce and discuss new ideas, and to develop, improve, or assure the quality of skydiving instruction.

Recommendations, USPA: Principles, policies, and concepts applicable to skydiving or a related subject which are derived from experience or theory, compiled by USPA, and offered for guidance.

Regional Director, USPA: Members of the USPA Board elected from a specified geographical area and responsible for representing the interests of the skydivers in that USPA Region.

Relative Wind: The relative airflow opposite a body’s trajectory, irrespective of the horizon.

Relative Work (RW): (see Formation Skydiving)

Reserve Parachute: An approved parachute worn for emergency use to be activated only upon failure of the main parachute or in any other emergency where use of the main parachute is impractical or use of the main parachute would increase risk. (FAR 105 definition)

Reserve Static Line (RSL): A connection between the main risers and the reserve activation system intended to initiate reserve activation following the release of a deployed main parachute.

Reverse Flight (FULL STALL): A non-flying canopy maneuver that collapses the canopy and may cause it to spin. Results from depressing the toggles until the trailing edge is lower than the leading edge. May result in an unrecoverable malfunction. (see also Stall and Dynamic Stall)

Rib: A vertical and longitudinal fabric membrane that forms the airfoil shape and primary structure of a ram-air canopy.

Riser Dock: In canopy formation, a momentum dock that puts the risers into the hands of the receiver. A very advanced technique.

Rig: [jar.] 1. n. The complete parachute system used for skydiving. 2. v. The act of maintaining, repairing, or modifying a parachute system. 3. v. To don a parachute (Rigging Up).

Rigger: An FAA-certificated parachute technician. (see also Master Rigger and Senior Rigger)

Ripcord: An assembly, usually constructed with a metal cable that, when pulled, activates an operation on a parachute system.

Riser (s): Webbing straps that connect the main lift webs of the parachute harness to the lines of the canopy.

Riser Loops; Riser Blocks: Gripping loops or devices on a riser that make it easier to grasp.

RSL: (see Reserve Static Line)

Safety & Training Advisor (S&TA), USPA: A local person appointed by the USPA Regional Director as his or her representative and who is available to provide advice and administrative assistance as the USPA representative at an individual drop zone or specified area.

Sanctioned Drop Zone: A drop zone which has been verified by a USPA Safety & Training Advisor or a USPA Regional Director as complying with the minimum drop zone requirements as stated in the USPA Basic Safety Requirements section of the USPA Skydiver’s Information Manual. (see also Drop Zone)

Self-Supervision: The point within a student’s training when he has been cleared by a USPA Instructor to jump without instructor supervision but has not yet completed all of the requirements for the USPA A-License. See Category E: Introduction of the Integrated Student Program.

Senior Rigger: The initial certification level for FAA riggers that allows its holder to pack and maintain a parachute system and perform simple repairs. (see Master Rigger)

Single-Harness, Dual-Parachute System: The combination of a main parachute, approved reserve parachute, and approved single-person harness and dual-parachute container. This parachute system may have an operational automatic activation device installed. (FAR 105 definition)

Single Operation System (SOS): Refers to a parachute harness and container operation system with a combined single-point riser release and reserve ripcord handle. Pulling one handle will both release the risers and pull the reserve. (see also Two-Handled System)

SIM: Abbreviation for Skydiver’s Information Manual (this book). (see Skydiver’s Information Manual)

Sit Flying: Upright vertical freely orientation based on a seated position. (see also Chute Assis)
Skyboard: (see Surfboard)

Skydive: 1. n. The descent of a person to the surface from an aircraft in flight when he or she uses or intends to use a parachute during all or part of that descent. 2. v. To jump from an aircraft with a parachute.

Skydiver: A person who engages in skydiving.

Skydive’s Information Manual (SIM), USPA: The official bound collection of the USPA Basic Safety Requirements, USPA recommendations, relevant FAA references, and other USPA policies and programs that affect the majority of skydivers.

Skysurfer: A skydiver who jumps with a surfboard (skyboard).

Skysurfing: 1. A freefall skydiving discipline using a specially rigged surfboard (skyboard). 2. The competition event by that name.

Slider: A device which controls a canopy’s inflation by progressively sliding down the suspension lines during inflation. Found on most ram-air canopies.

Slinks: A type of Spectra fabric connector link developed by Performance Designs, Inc., for attaching the lines of the parachute to the risers

Solo Student: A skydiving student who uses a single harness, dual-parachute system.

SOS: (see Single-Operation System)

Span: The dimension of a wing measured from tip to tip.

Spotting: Selecting the correct ground reference point over which to leave the aircraft, selecting the course for the aircraft to fly, and directing the pilot on jump run to that point.

Stable Freefall Position: A position attained by a freefalling skydiver in which only controlled, planned movements are made.

Stability: That property of a body which causes it, when its equilibrium is disturbed, to develop forces or movements tending to restore the original condition. In skydiving, control of body position during freefall.

Stack: A vertical canopy formation with the jumpers gripping the canopy or lines just below the canopy.

Static Line: A line of cable or webbing, one end of which is fastened to the parachute, the other to some part of the aircraft, used to activate and deploy or partially deploy the parachute as the load falls away from the aircraft.

Static Line Jump: A parachute jump during which a static line is used to deploy or partially deploy the parachute. Used for training student skydivers.

Stall: n. The state of canopy flight control characterized by decreased glide and increased rate of descent. (see Dynamic Stall and Reverse Flight)

Step-Through: (see thread-through)

Student: A skydiver trainee who has not been issued a USPA A-License.

Supervision: The general oversight of an activity taking place where the supervisor is readily available for counsel and direction and who is responsible that the activity is satisfactorily completed. (see Direct Supervision)

Surfboard (Skyboard): n. A rigid panel, similar to a snowboard, attached to a jumper’s feet.

Suspension Lines: Cords, attached from the bottom of the parachute canopy to the risers, that distribute and suspend the weight of a skydiver under the inflated canopy.

Swoop: 1. v. To rapidly dive toward and then make a controlled approach relative to a target. 2. n. The controlled flight from above of one body to meet or fly close to another body, a stationary object, or the ground.

Swoop Pond; Swoop Ditch: A water obstacle used as a high-performance landing area.

Tandem Jumping: A method of skydiving, typically used for training student skydivers or introducing newcomers to the sport, where one jumper shares a tandem parachute system with another.

Tandem Parachute Operation: A parachute operation in which more than one person simultaneously uses the same tandem parachute system while descending to the surface from an aircraft in flight. (FAR 105 definition)
**Tandem Parachute System:** The combination of a main parachute, approved reserve parachute, and approved harness and dual parachute container, and a separate approved forward harness for a passenger parachutist. This parachute system must have an operational automatic activation device installed. (FAR 105 definition)

**Target:** The landing area on a drop zone. For officially sanctioned competition, a three-centimeter disk.

**Technical Standard Order (TSO):** Issued by the FAA, requires compliance with minimum performance standards and specifications for material and products. Parachute specifications are referenced in TSO-C23.

**Terminal Velocity:** The equilibrium velocity that a freefalling body can attain against the resistance of the air. The greatest speed at which a body falls through the atmosphere.

**Thread-Through (step-through):** (jar.) n. A leg strap configuration on a parachute harness that uses a single piece of adjustable hardware. The leg strap must be unthreaded to be disconnected, or the jumper simply steps into the connected leg straps when donning the rig. (see B-12s)

**Three-Ring Release:** A type of single point release invented by Bill Booth. The system is based on three interlocking rings on each riser held in place by a small loop that is retained by a cable. Pulling one handle releases both main risers simultaneously or nearly simultaneously.

**Throw Out:** 1. n., adj. A type of hand-deployed parachute activation system. The pilot chute is folded into an external pouch, extracted and thrown. A curved closing pin or equivalent locking device on the bridle is extracted as jumper falls away from the pilot chute and bridle, allowing the container to open. (see Hand Deployed pilot chute) 2. v. (jar.) To initiate deployment.

**Toggles:** n. Handles attached to the ends of the steering lines of a parachute canopy. (see also Brakes)

**Track:** 1. n. A freefall position with the legs fully extended, knees locked, arms swept back, elbows locked, and torso fully extended and slightly bowed forward to achieve the maximum horizontal speed. 2. v. To move at maximum horizontal speed in freefall.

**Trim Tabs:** A front riser pulley system for adjusting a canopy’s angle of incidence or flight attitude.

**TSO-C23:** (see Technical Standard Order)

**Turbulence:** Disturbed air that can affect canopy flight and integrity.

**Two-Handled System:** Refers to a parachute harness and container operation system that uses separate handles for the canopy release and for reserve activation. (see Single Operation System)

**U**

**United States Parachute Association (USPA):** A not-for-profit, voluntary membership association of skydivers whose purpose is promoting and representing skydiving. As a division of the NAA, it is the official representative of the FAI for skydiving in the U.S.

**Upwind:** The direction from which the wind is blowing.

**W**

**Waiver:** n. 1. Exception to the BSRs filed by a USPA official indicated in SIM Section 2-2. 2. (jar.) A liability release.

**Water Jump:** n. A skydive which includes intentionally landing in an open body of water.

**Wind Drift Indicator (WDI):** n. A device used to determine the wind drift which a descending parachute will experience, so constructed as to descend at a rate comparable to a skydiver of average weight descending under a fully deployed main canopy of average specifications. Usually a weighted strip of crepe paper 10 inches wide and 20 feet long.

**Wing Suit:** n. A gliding jumpsuit designed with fabric membranes between the legs of the jumper and from each arm to the torso.

**Wing Loading:** n. The jumper’s exit weight divided by the area of the parachute canopy, expressed in the United States in pounds per square foot.