



# Category F Training Aid

All training to be conducted by instructors of the:



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## 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. 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. Detailed review also continues on the emergency procedures introduced in the first-jump course. Soon, you'll graduate and become independent of supervision.

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

### Three Jumps

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 also 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'll also learn more about how to handle aircraft emergency exit procedures independently. The 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're 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. 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 (former AFF students).
- 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:

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

##### 2. Medical requirements:

- 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.



3. Age requirements:

- a. Skydivers are to be at least either:
  - (1) 18 years of age.
  - (2) 16 years of age with notarized parental or guardian consent.

4. Maximum ground winds:

- a. For all solo students:
  - (1) 14 mph for ram-air canopies (StartSkydiving.com is waived 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:

- 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—2,000 feet AGL.

6. Drop zone requirements:

- 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—100 meters.
  - (2) B and C license holders—50 meters.
  - (3) D license holders—unlimited.
- b. Hazards are defined as telephone and power lines, towers, buildings, open bodies of water, highways, automobiles, and clusters of trees covering more than 3,000 square meters.
- 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:

- 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 equipment 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 a reserve static line, except:
    - i. A student who has been cleared for freefall self-supervision may jump without a reserve static line upon endorsement from his or her supervising instructor.
    - ii. Such endorsement may be for one jump or a series of jumps.
  - (3) A visually accessible altimeter.
  - (4) A functional automatic activation device 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, spring-loaded, pilot-chute-equipped main parachute or a bottom-of-container (BOC) throw-out pilot chute.



- c. Students must receive additional ground instruction in emergency procedures and deployment-specific information before jumping any unfamiliar system.
8. For each harness-hold jump, each AFF rating holder supervising the jump must be equipped with a visually accessible altimeter.
9. 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).
10. Special altitude equipment and supplementary oxygen:
  - a. Supplementary oxygen available on the aircraft is mandatory on skydives made from higher than 15,000 feet (MSL)

## **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) Three points of harness attachment for snap assembly and correct routing, adjustment, and no twists.
    - (3) Three operation handles-main activation, cutaway, reserve.
  - b. Pin check back of system, top to bottom:
    - (1) Reserve pin at least halfway seated (and automatic activation device on).
    - (2) Main pin fully seated.
    - (3) Ripcord cable movement or correct bridle routing.
    - (4) If collapsible pilot chute, check the indicator window.
    - (5) 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.

## **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 the 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 (< 1000 feet)
  - (2) Altitude below which all jumpers will jump using their reserves (1000 feet – 2500 feet)
  - (3) Altitude below which all jumpers will jump and immediately use their main parachutes (> 2500 feet)
- c. Jumpers must maintain correct weight distribution in the aircraft, especially during emergency exit procedures.

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 first get 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 for a sea-level drop zone:

Altitude	Heading	Speed (mph)
3,000 ft	250	07
6,000 ft	260	14
9,000 ft	270	16
12,000 ft	290	23
Average	270	15

Table F.1 - Note: 15 mph = ¼ mile per minute

- (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.



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 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 (instructor technique may differ).
    - (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 degrees to your spine and level with your hips (instructor technique may vary).
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 effectively meet the relative wind.

## **Emergency Procedure Review**

1. Recognizing and avoiding power lines:
  - a. Expect power lines along roads, between buildings, in paths in the forest, and in random places.
  - b. Scan every 500 feet of descent into an unfamiliar landing area and continually scan below 500 feet.
2. Power-line landing emergency procedures.
  - a. Avoid the area early during the canopy descent. Use minimum braked turns as necessary to avoid power lines. Land parallel to the wires when possible.
  - b. Feet and knees together, flare at least half way and prepare for a hard landing.
  - c. Place your hands inside the front and rear risers. Touch no more than one wire at a time.
  - d. If suspended in the wires, the parachute can conduct electricity so the power needs to be shut off before making contact with one or anything on the ground.
3. Tracking practice procedure:
  - a. Experienced jumpers often allow only five to ten seconds to obtain adequate separation.
  - b. Practice entering and refining an on-heading track for ten seconds, reversing direction, and 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, 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 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 back 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.
7. Accumulate two unassisted landings within 25 meters of the planned target.



## Category F Quiz

(Must be passed before Category F jump)

- 1. What is the best way to change the 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 a 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 at StartSkydiving.com?**

- a) 10 mph
- b) 16 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 a ten-week period 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 a four-month period 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-1 Dive Flow

One AFF Instructor or USPA Coach

### Freefall Dive Flow

- Spot with minimal assistance.
- Choice of exit position.
- Turn 90° from line of flight.
- Check altitude.
- Track for five seconds, turn 180°, return.
- Check altitude.
- Repeat until 6,000 feet.
- Wave off and pull by 4,000 feet.

### Canopy Dive Flow

- Discovery of stall point.
- Discovery of flattest glide; lowest descent.
- Practice flaring from deep brakes.
- Practice 180 degree turns while flying in deep brakes.
- Identify all the power lines in the area during descent.
- Verify landing pattern and adjust as necessary.
- Steer over correct portion of flight path until 1,000 feet.
- Follow planned pattern over landing area or alternate in brakes.
- Prepare to PLF.
- Landing flare from brakes (if using a suitable canopy).

## Category F-2 Dive Flow

One AFF Instructor or USPA Coach

### Freefall Dive Flow

- Clear and pull from 5,500 feet.
- Spot with minimal assistance.
- Poised exit.
- Initiate deployment within five seconds.

### Canopy Dive Flow

- Same as F-1 Canopy Dive Flow.

## Category F-3 Dive Flow

One AFF Instructor or USPA Coach

### Freefall Dive Flow

- Clear and pull from 3,500 feet.
- Spot with minimal assistance.
- Poised exit.
- Initiate deployment within five seconds.

### Canopy Dive Flow

- Same as F-1 Canopy Dive Flow.



## **Advancement Criteria**

### **Aircraft and Spotting**

- Spot the aircraft, including all procedures, with minimum assistance.

### **Exit and Freefall**

- Cumulative three tracking sequences: track for ten seconds within 30 degrees of the planned heading, turn 180 degrees, and track back for ten seconds.
- Two clear and pulls (already accomplished by former IAD and static-line students).

### **Canopy**

- Cumulative four 180-degree 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 25 meters 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.

