First Jump Course and AFF Level 1

Section 1 – Overview and Introduction to Skydiving

My FJC instructor(s)_____

My responsibilities, as a student

- I am responsible for my own skydive
- Instructors assist and supervise students
- Waiver/paperwork must be signed prior to the beginning of the class
- USPA membership is required prior to the first jump

Skydiving is an Extreme Sport!!!

- Low-experienced jumpers should study and practice recurrency materials during layoffs between jumps
- Ask AFF instructors in case of questions or in need of clarification

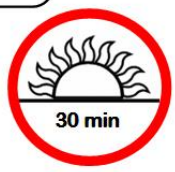
Personal Condition

- General Considerations
- Good general physical condition
- Well-rested body with full night of sleep and stretch prior to every jump
- Well-functioning brain and proper nutrition, especially on hot or cold days
- Comfortable clothing: sportswear, low-top sneakers
- Specific Physical or Medical Conditions
- Any medical conditions, or any medications?
- Any scuba diving activities in the past 24 hours?
- Any symptoms of fatigue, headache, etc.?

Student Progression

- AFF Levels 1 – 7 focus on Life-saving, altitude awareness, and basic body position skills
- Coach jumps focus on basic group freefall skills for A-License
- Additional training required for A-license
- Canopy Control Training
- Packing Course
- Two additional emergency procedure reviews

Student Jump Limitations



- Surface winds greater than 14 mph
- Clouds (no jumps through clouds, cloud coverage obscuring the ground)
- Insufficient daylight conditions: all student jumps must be completed 30 minutes prior to the official sunset time

Currency Requirements

- Students, who have not jumped in
- 30 days, must take recurrency training
- 60 days, must take recurrency training and repeat their last AFF level
- 6 months, must repeat all portions of the First Jump Course, and make an AFF level 3 skydive

Governing Organizations:

United States Parachute Association (USPA) http://www.uspa.org/

- Parachutist Magazine
- Skydiver's Information Manual (SIM)

Federal Aviation Administration Regulations

- Part 91: Clouds and Visibility Requirements
- Part 105: Use of *helmets* and seatbelts

Dropzone Rules

- Check in at manifest prior to every jump
- No pets, unsupervised children, drugs
- Alcohol not allowed during skydiving operations

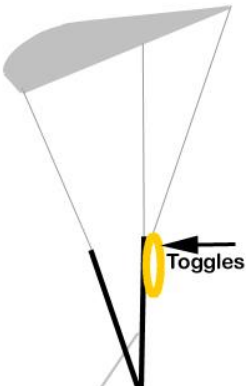
Section 2 – Equipment: "The Most Important Thing is to Pull the Parachute!"

Main Pilot Chute Handle
- Located on the bottom of container
- Activated by pulling and through the pilot chute out

Main Cutaway Handle
- Red pillow handle located on the right main lift web
- Used to jettison the main canopy in case of malfunction by
- Activated by peeling the Velcro and pulling all the way down

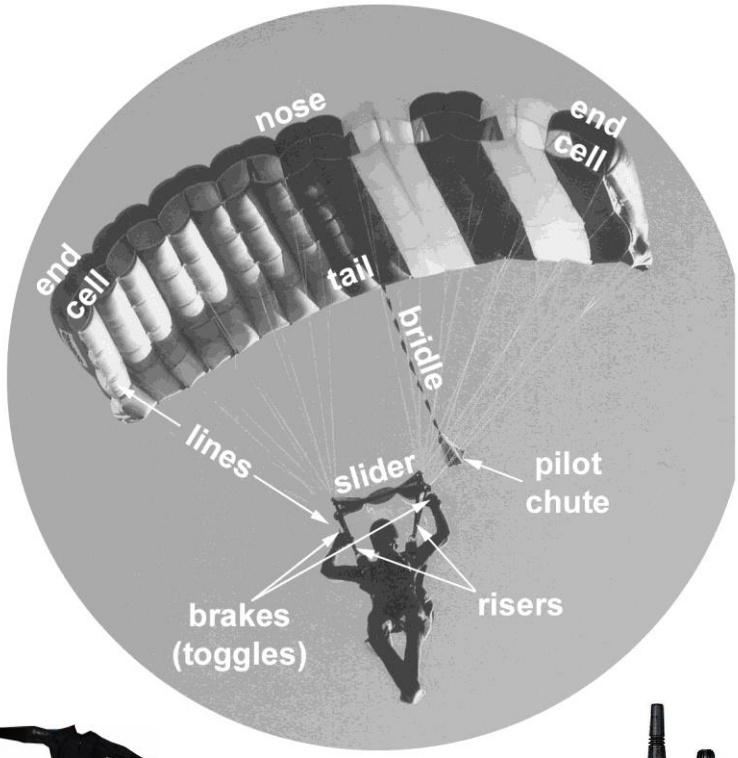
Reserve Activation Handle
- Silver D-ring located on the left main lift web
- Used to open the reserve canopy
- Activated by pulling all the way down

Steering Toggles
- Velcroed onto rear risers and used to steer and flare the canopy
- Release the toggles by peeling the Velcro and pulling down
- Keep the toggles in hands at all times



Altimeter
- Shows approximate altitude above ground level in thousands of feet
- Worn on the left wrist

The Main Canopy
- Square (more specifically, rectangular)
- Normally made from zero-porosity nylon
- Usually has yellow steering toggles (brakes), stowed in ¼ brake position
- Once the canopy opens, unstow the brakes by pulling on both the toggles
- Pull right toggle to go right, left – to go left.
- Pull both toggles all the way down to flare.



Reserve Canopy
- Looks, flies, and controls same as the main canopy
- Usually a solid color
- Steering toggles are usually red
- Is designed to open fast!!!

Other equipment
- Jumpsuit
- Hard Helmet: proper fit, chin strap adjusted
- Goggles: clear, snug fit
- Sneakers: low top preferred, double knotted
- Gloves: comfortably snug fit with good grip
- Radio: back-up aid to assist students under canopy

Gear checks

- Full gear check
  - Prevents certain malfunctions
  - Consists of an entire detailed scan of the rig and other equipment as per checklist
  - Mandatory for students and jumpers who are renting the gear from Skydive Temple
- Students will receive three gear checks
  - Before putting the gear on
  - Before boarding the aircraft
  - Shortly before the exit
  - Pin Checks
    - Abbreviated gear checks, used by all jumpers regardless of experience level prior to every jump

The Container System

Section 3– Aircraft – Approach from the Rear or Behind the Wings!

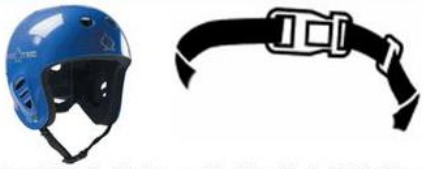
- I will listen to my instructors in case of an emergency
- Never walk out to the airplane, unless accompanied by instructor
- Approach aircraft from the rear, behind the wings
- Put helmet on prior to boarding and secure the chinstrap
- Protect the handles and minimize movement inside the aircraft

Aircraft Procedures

- Use Seatbelts and Helmets During
  - Taxi and take-off, and first 1,500 feet of the climb
  - Landing (if landing with the aircraft)
- Aircraft Emergencies – Listen to instructors
  - Below 1,500 feet - land with the airplane: seatbelts and helmets on, knees to the chest, grab rig in front with forearms, head tucked in
  - Above 1,500 feet - bail out on reserve, grab the reserve handle, jump, arch, 1-1000, 2-1000, pull.
  - Above 2,500 feet – bail out on main, grab the main pilot chute handle
  - Above 6,000 feet – poised exit
  - Above 9,000 feet – proceed with the skydive
- Pilot Chute Out
  - Yell: “Pilot Chute Out!” and try to contain it
  - If it’s mine, and it goes out the door, I MUST GET OUT!!!

Never walk out to the airplane,
Unless accompanied by instructor

Seatbelts and Helmets on!



For Taxi, Take-off, Until 1,500 feet

Getting Ready

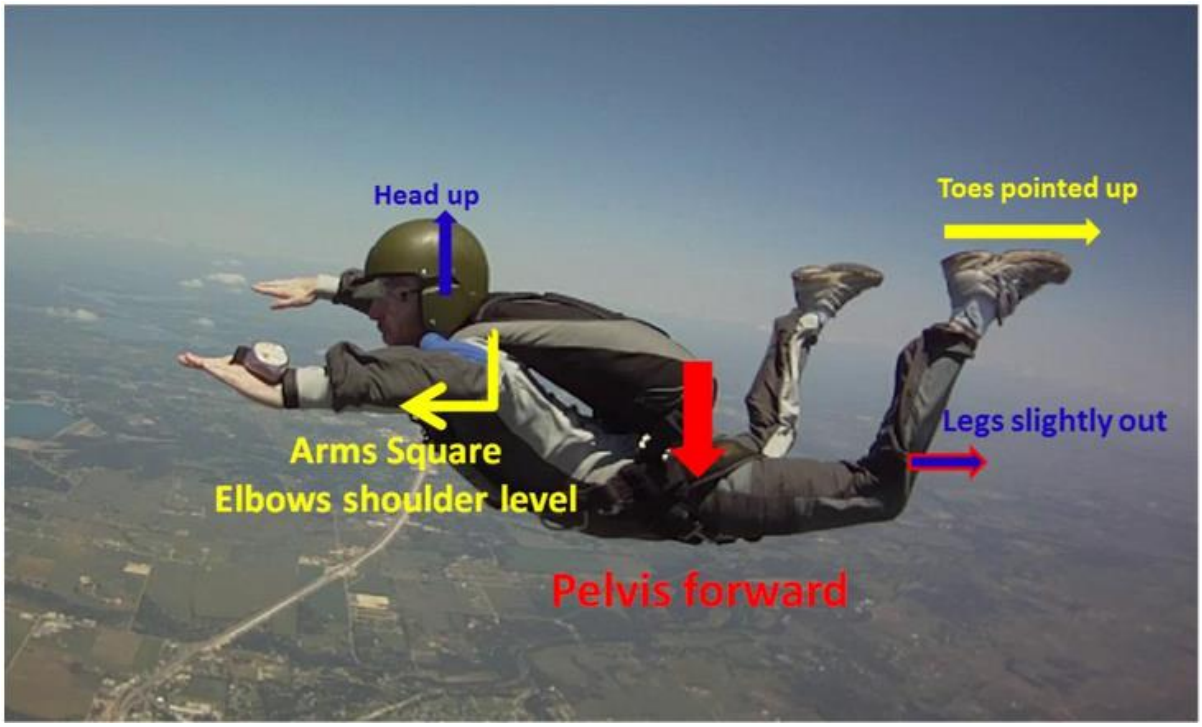
- Prior to exit every student will receive a full gear check
- Put goggles and helmet on when instructed
- Just prior to exit the instructor will ask:
  “Are You Ready to Skydive?”
- I must answer “Yes” to proceed further
- If, for any reason, I don’t feel like I can make this jump, it is okay to say No
- When instructed proceed to the door, stay low

Exiting the Aircraft – ARCH!

I am in control of the exit and the skydive

- When instructed, take position in the door:
- Lower picture for Cessna 182
- Check with instructor:
- “Check In..,” eye contact, wait for OK
- Exit count:
- “Prop… (actually look at the propeller)
- Up, Down, ARCH!”
- Step out with left leg
- The most important thing after exiting the aircraft is to ARCH!

Section 5 – Freefall: "Relax and Arch!!!"



Freefall Hand Signals –

make necessary correction and check with instructor until you get an okay

Pull now!

Check altimeter

Pelvis down

Legs out

Relax

Check arch

Practice touch

Legs in

Check arms

Toe taps

Student Flight Planner – Cat B

Training Objectives

- Relaxing in skydiving environment
- Altitude awareness
- Body position
- Unassisted pull

Dive Flow

- Exit and ARCH!
- Full Circle of Awareness (COA)
  - Heading – look at the horizon
  - Altimeter – look at the altimeter
  - Instructor check, wait for OK, look for signals
- Three (3) Practice Pilot Chute Touches
  - Arch
  - Reach
  - Touch
  - Arch
  - Check altimeter
- Full Circle of Awareness
  - Heading – look at the horizon
  - Altimeter – look at the altimeter
  - Instructor check, wait for OK, look for signals
- Short Circle of Awareness (COA)
- Heading – look at the horizon
- Altimeter – look at the altimeter
- Mental body position scan
- Repeat Short COA until 6,000 feet, and focus on relaxing and breathing: “Focused Concentration”
- At 6,000 feet lock on to altimeter and relax
- At 5,500 feet initiate pull sequence:
  - Wave
  - Arch
  - Reach
  - Pull
  - Throw
  - Arch
  - Count 1-1000, 2-1000, 3-1000, 4-1000, 5-1000
- Visually check canopy (next section)

Pull Priorities

- Pull !!!
- Pull at the correct altitude
- Pull at the correct altitude with stability

Altitude Checks

- Every 5 seconds
- Between maneuvers
- If experiencing difficulty with a maneuver
- In case of loss of altitude awareness

Freefall Problems

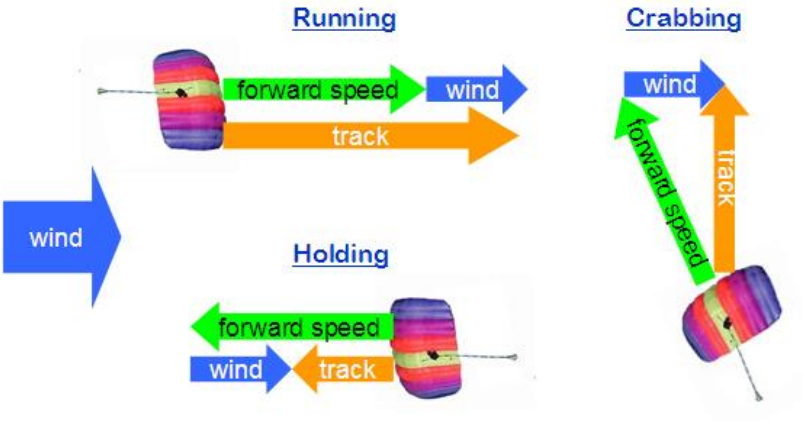
- Instability (potato-chipping) – Relax!!! Pelvis down, arch, and check altimeter.
- Spinning – Relax!!! Arch, check altimeter, then scan for proper body position
- Altimeter problems – can’t see or failed – PULL!!!
- Instructor gone – Pull!

Section 6 – Canopy Control: "I Am Now a Pilot!!!"

Canopy's natural speed and effects of the wind on canopy's ground track and speed

- **True airspeed** is approx 20mph, that's how fast the canopy moves through still air.
- **Ground speed** is how fast the canopy moves relative to the ground. In no wind, ground speed equals true airspeed.

  - **Tail wind (Running)** – canopy flown in the same direction as the wind. Ground speed is a sum of forward speed and the wind speed
  - **Head Wind (Holding)** – canopy flown in the opposite direction of the wind. Ground speed is a difference between forward speed and the wind speed
  - **Cross Wind (Crabbing)** – canopy flown cross wind. The wind pushes the canopy to the side. Need to steer into the wind to maintain desired track.

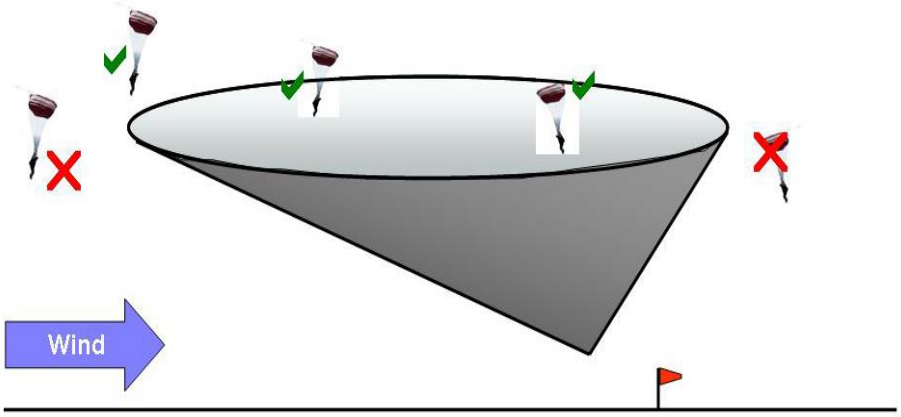


True glide is how fast the canopy descends at it travels forward in still air, and it is approximately 2.5:1 (for every 250 feet of horizontal travel it will descend 100 feet)

  - **Tail wind** causes a flatter (running) glide and allows to cover more ground
  - **Head wind** makes for a steeper (holding) glide and shortens the ground distance.

Playground

  - Playground is an imaginary area shaped as an upside down cone within which I can safely make it back to the dropzone.
  - It extends vertically from the opening altitude down to 800' AGL, and horizontally upwind from the dropzone.
  - As a general rule, we plan to exit the airplane upwind from the dropzone, such that we open our canopies in the playground
  - If you are still outside of the playground by 2,500 feet, you might not make it back to the DZ.



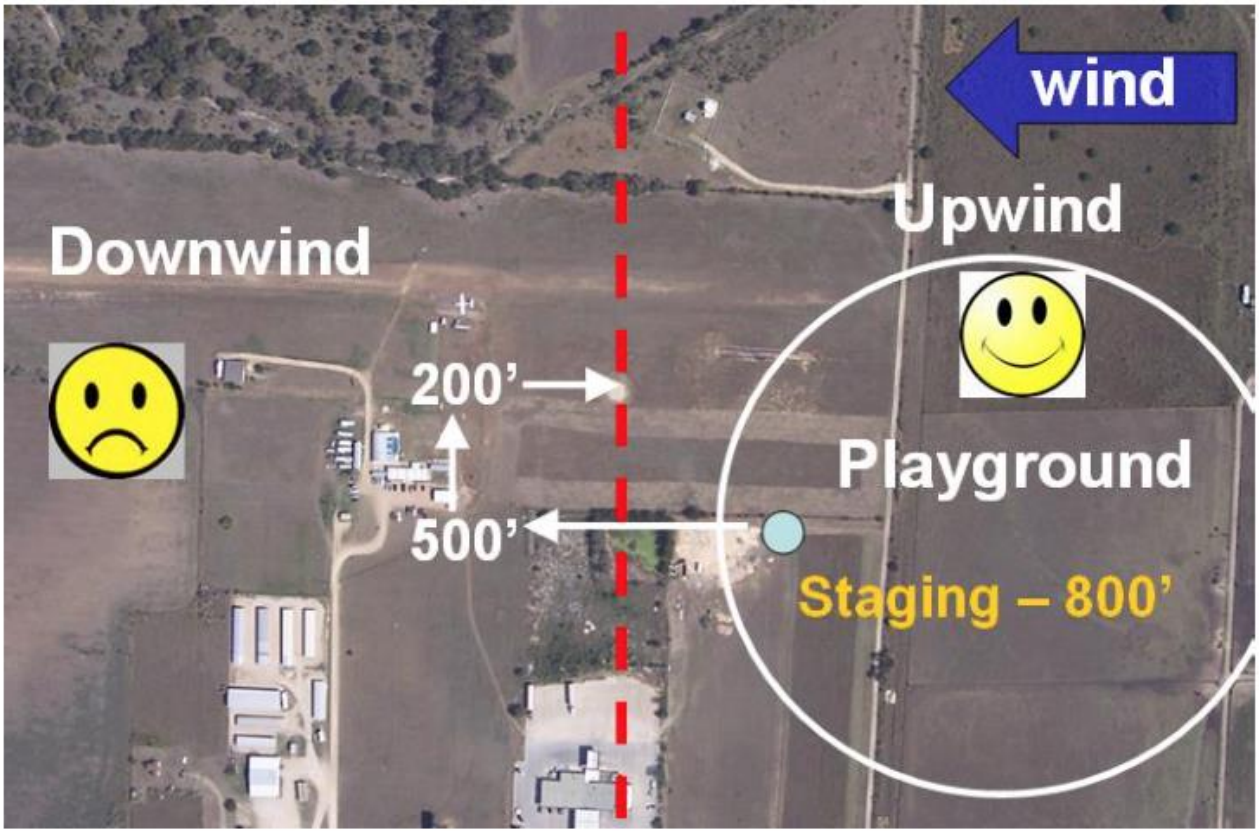
Staging area

- Staging Area is located at the bottom of the playground cone at approx. 800' AGL upwind from target
- Designates the entry point into the landing pattern

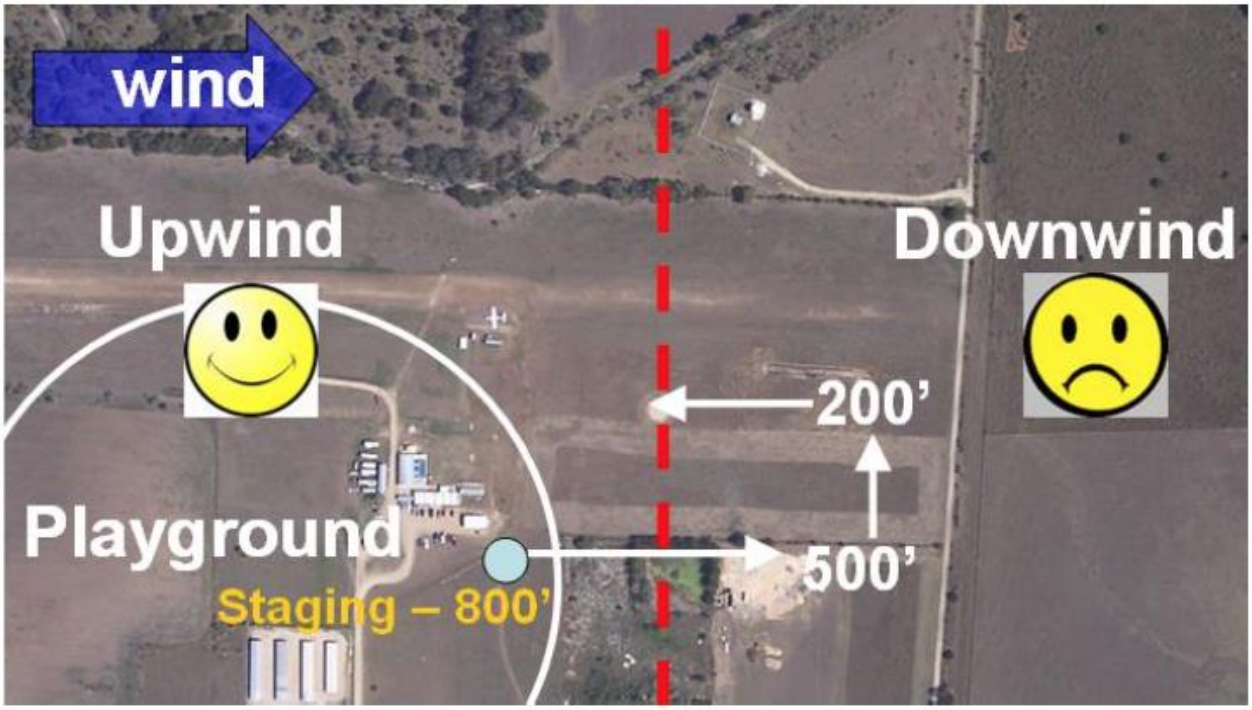
The Landing Pattern

- Landing Pattern is established to provide means to turn in to the wind for landing and creates an orderly flow of traffic into the landing area.
- It consists of 3 segments or legs:
  - Downwind leg (begins at the staging area)
  - Base leg (starts at approx. 500' AGL with a 90-degree turn at the end of the downwind leg)
  - Final leg (begins at approx. 200' AGL with a 90-degree turn into the wind)
- Right-Hand Pattern – all turns are made to the right (normally used in Southerly winds)
- Left-Hand Pattern – all turns are made to the left (normally used in Northerly winds)
- Instructor will advise on which pattern is used on a particular day

Southerly Winds Pattern Example (Right-hand pattern)



Northerly Winds Pattern Example (Left-hand pattern)



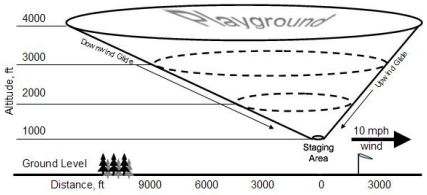
Student Canopy Flight Planner

As soon as the canopy fully opens perform Controllability Check (3 S's)

- Square – canopy must be square (or rectangular) in shape
- Stable – it should fly straight without spinning
- Steerable – remove the toggles and do the following:
  - Check flare
  - Check right turn
  - Check left turn

Start your canopy flight

- Exhale, clear nose, adjust goggles if necessary
- Check altimeter and find the dropzone
- Fly to and hold in the playground, making way to the staging area
- Check your location (look between your feet) and altimeter every 10-15 seconds
- When I reach the staging area at 800 feet, begin landing pattern.

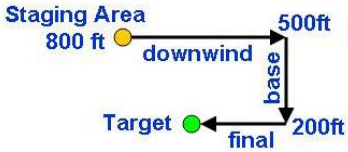


Radio Commands:

- Right, right, or left, left;
- Stop! (stop whatever I am doing)
- Hold heading;
- Arms (all the way) up; Feet and knees together
- Flare-flare-flare

On final, prior to landing

- Steer into the clear area
- Only minor corrections (no more that ¼ toggle input) below 200 feet
- Check wind direction frequently and steer into the wind
- Focus on target, be aware of traffic (other canopies, airplane)
- When on final, put arms are all the way up, and feet and knees together, knees soft.

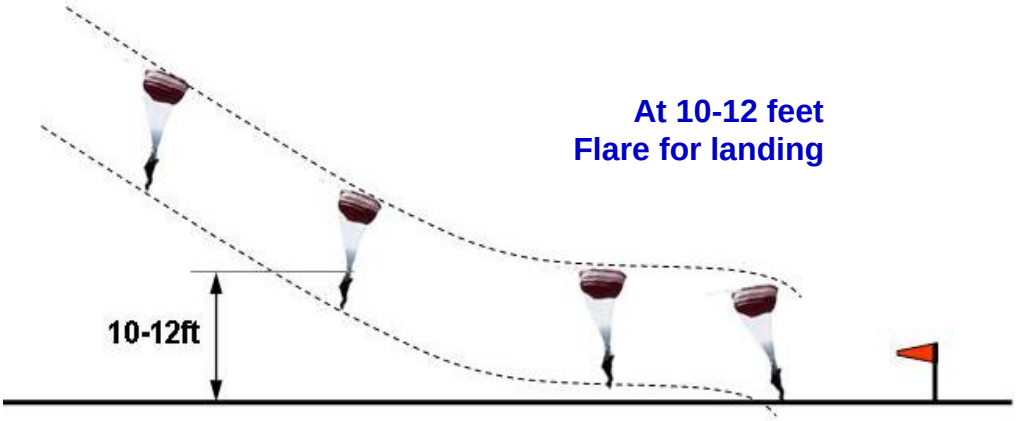


Landing Priorities

- Wing level: complete all the turns before the landing flare
- In the Clear Area: Land away from obstacles
- Flare: I must flare the canopy at least half way
- Into the wind: if altitude permits, execute the landing pattern to turn in to the wind prior to landing

Landing Flare

- At 10-12 feet (height of building roof, wind blades, ½ tree height) pull both toggles evenly all the way down
- Well-timed flare will transition the canopy to a horizontal flight just prior to my feet touching the ground
- Continue flying the canopy during flare. If it starts turning, pull on the opposite toggle to level the wing.
- If flared too high, go to ½ brakes and re-flare
- Fly the canopy all the way until on the ground and canopy no longer flies.
- Keep feet and knees together until landed
- PLF, if necessary



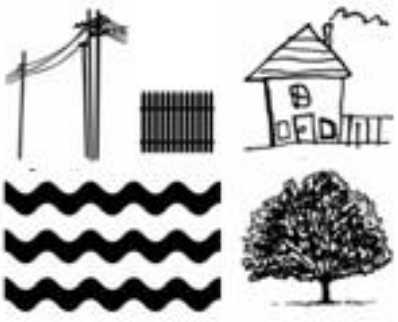
Landing off the Dropzone – Decide by 2,500 feet

- Decide by 2500 feet whether I am landing on or off the dropzone
- Locate a large clear area and plan to land in its center. Transfer the playground, staging area and the landing pattern onto the my new landing area
- Stay in the new playground, and fly to the new staging area at 1,000 feet, and fly the pattern
- Be sure that my wing is level prior to landing and be prepared to PLF

After Touchdown

- Parachute Landing Fall – 5 points of contact
  - Balls of feet
  - Calves
  - Thigh
  - Butt
  - Back/shoulder
- If fallen after landing, stand up if okay, or stay down if hurt
- To collapse the canopy in high winds
  - release one toggle, pull the other in
  - run toward and on the other (downwind) side of the canopy
- Velcro the toggles, and daisy chain the lines
- Keep all gear on to avoid losing anything

Avoid Obstacles!!!

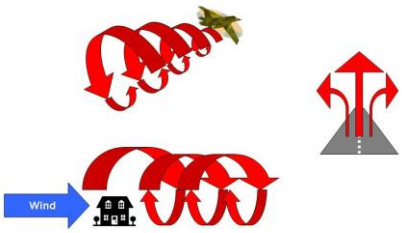


Landing Obstacles – AVOID!!!

- Runway: Avoid landing on and crossing below 500 feet. If landed on the runway, pick up all of your canopy and leave the runway immediately.
- Trees: aim for thickest portion, flare ½ brakes at tree tops or just outside the outer limbs, protect face, prepare to PLF. If suspended grab strongest part of tree and wait for help. Stay in the harness
- Power lines: fly parallel to power lines, flare ½ brakes right before lines, prepare to PLF. DO NOT get out of the harness if off ground. Wait for a power company for assistance. Touch only one wire at a time.
- Buildings, Fences, Cars: Try to glance off a wall or an obstacle, if possible. Full flare just prior to impact, strike with side of my body, keep feet down and PLF. If landed on the roof be prepared to PLF twice.
- Water: undo the chest strap as soon as I realize that water landing is eminent. Face into the wind, flare at 10 feet, and prepare to PLF. Get out of leg straps, follow a canopy seam to get out from under the canopy and swim to shore. DO NOT cut away over water!

Turbulence

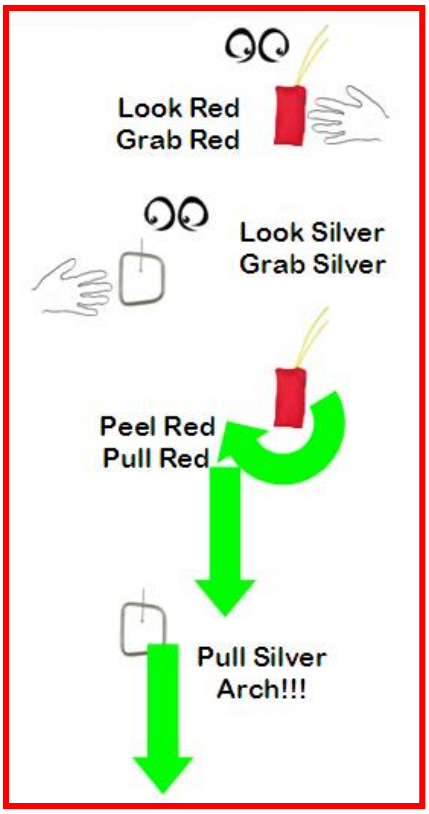
- Turbulence is caused by
  - Thermals (pockets of rising air), or
  - Wind overcoming obstacles
  - Airplane wings
- It is usually present close to the ground
  - Over and downwind from trees and buildings
  - Over runways and roads
  - In the path just flown by an airplane



Flight Plan Exercise

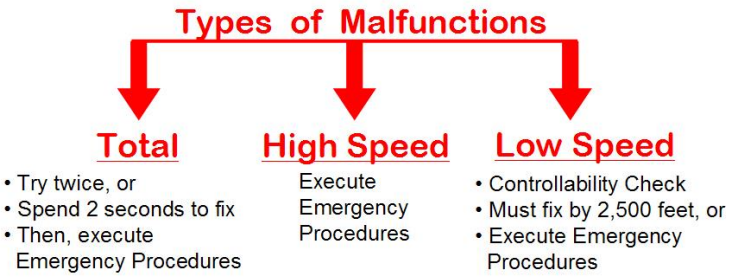
- For actual wind conditions on this day, on the picture below identify playground, stating area, the landing pattern, along with corresponding altitudes

Section 7 – Emergency Procedures: "Look.., Think.., Act!"



To cutaway the main canopy and open the reserve, do the following (see illustration on the right):

- Arch!
- Look Red
- Grab Red
- Look Silver
- Grab Sliver
- Peel Red
- Pull Red
- Pull Silver
- Arch!
- If no reserve, pull silver again



Total Malfunction – at Freefall Speeds:

***Try twice or spend no more than 2 seconds to* fix the problem, then execute emergency procedures**

Types of total malfunctions and how to fix:

<u>I can't find</u> the pilot chute handle
- Find the bottom corner of the container, then
- Move my hand down toward the pouch and look for it

<u>I can't pull</u> the pilot chute
- Let go – I may be gripping onto something else
- Find the pilot chute handle and get a good grip on it
- Aggressively pull it

I pulled the pilot chute, but

No pilot chute or canopy overhead
- Try pulling the main pilot chute again (the pilot chute may not be pulled all the way)
- Prevention tip: Be aware!

The bridal wrapped around my arm or leg:
- Point to the pilot chute, and
- Briskly twist my arm or leg and try to shake off the bridle
- Prevention tip: when throwing the pilot chute, twist my hand back so that the palm faces up

Pilot Chute-In-Tow
- Twist upper body to disrupt the burble behind my back
- Prevention tip: throw the pilot chute only after bringing it out to a full arm extension away from my body

Fast Malfunctions – No or Insufficient Canopy Overhead

EXECUTE EMERGENCY PROCEDURES

- Qualified for either one of descriptions – Not square, Not Stable or Not Steerable
- Definition – no support, no or minimal arrest of freefall speed
- The main canopy came out of the container, but <u>did not open correctly</u>, due to:
    - Horseshoe
    - Bag lock
    - Streamer
    - Lineover
    - Major canopy damage
    - Hard spin – canopy overhead, but rapidly spinning (extreme lack of "stable")
- Execute Emergency Procedures

Horseshoe
- Premature container opening
- Try to extract the pilot chute

Baglock
- The canopy never came out of the deployment bag

Streamer
- Canopy did not begin inflating

Lineover
- Suspension lines wrapped over the nose of the canopy pinching its end cells on either side
- Could be a Slow malfunction, if stable and controllable

Major Canopy Damage
- Can see blue sky through
- Hole that I can climb through
- Two or more broken lines

Hard Spinning Canopy
- Characterized by extreme lack of stability
- Canopy may appear to have correct shape, but could have a problem that's not visible

Fix by 2500 feet, or Execute Emergency Procedures

Slow Malfunctions – Fix by 2,500 feet - Decision Altitude

- Definition: canopy shape is close to square with freefall rate of decent significantly arrested
- Canopy is overhead, but it is not completely square or it doesn't fly correctly
- Attempt to fix by 2500 feet (decision altitude)
- If can't fix by the decision altitude or fail controlability check then execute emergency procedures

Stuck slider

- Slider did not come down to the top of the risers
- Flare all the way and release. If not fixed,
- Flare and pump brakes
- The slider must be square and at least half way down the lines

Tension knots

- Slider stuck and not square
- Slider is not square and/or will not come down
- Attempt to flare and perform controllability check

Line twists

- Canopy overhead, but the lines are twisted
- Spread risers apart
- Scissor legs and kick
- Be sure to get out of all line twists before un-stowing the toggles

End cell closure

- Un-stow brakes and flare all the way down
- If end cells stay closed, perform controllability check

Other slow malfunctions

Slow turn

Canopy is overhead, but it is in a turn (not a spin)

- Caused by a premature brake release
- Un-stow both brakes and flare

Minor Damage

- One broken line, or
- A small hole that I cannot climb through

Broken Steering Line

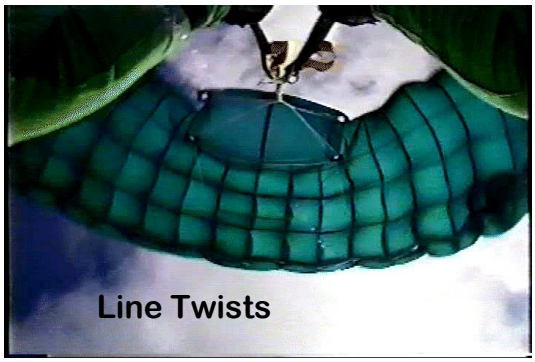
- Toggle in my hand with no line attached to it
- Attempt to steer by pulling on the rear risers

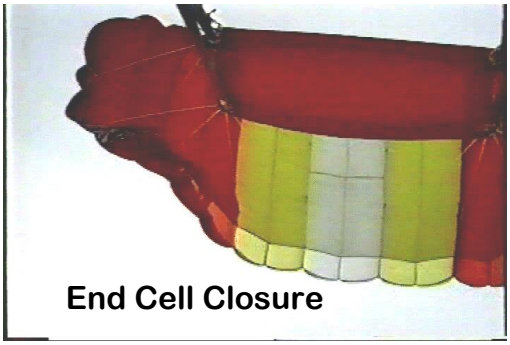
Pilot Chute over the Nose

- Generally not a problem
- Attempt to flare and perform controllability check

In any case, perform controllability check

- If the canopy is not square, stable, or steerable,
- Let go of the toggles, and
- Execute Emergency Procedures





Two Canopies Out

- Three possible configurations
  - Bi-plane
  - Side-by-Side
  - Downplane
- First, disconnect the RSL
- Then, deal with a particular configuration (next)

Bi-Plane

- One canopy is in front of the other - very stable configuration
- Leave brakes stowed
- Steer with rear risers or toggles of the front canopy
- Do not flare for landing and PLF
- Cutaway is not recommended

Stable Side-by-Side

- Disconnect RSL
- Steer with risers or toggles of the dominant canopy
- Do not flare either canopy and PLF on landing

Downplane or Unstable Side-by-side

- Unstable side-by-side may revert to a downplane
- Disconnect RSL
- Cut away the main canopy

Always ask your instructors if you have any questions or concerns before the jump!
Be safe and have fun!