Winch Pilot Training Record Supplement

1 Study Materials

1.1 USA Winch Training Syllabus

The Utah Soaring Association (USA) has published a syllabus for winch launch training. It can be downloaded from the flight training page on the USA website. The syllabus is a brief outline, but when combined with this document and the winch pilot training record, a thorough understanding and training of winch launch can be accomplished. The flights required on the winch launch syllabus are a minimum and several more should be expected depending on conditions and pilot experience.

1.2 USA Winch Training Guidelines

This document contains the knowledge requirements to safely participate in winch training and winch operations. Read this document carefully. Pass on any questions you may have to a USA winch qualified instructor.

1.3 USA Winch Pre-Departure Ground Operations

The wing runner has many responsibilities during USA winch launch operations. Those responsibilities are described in the pre-departure ground operations document. As the PIC you should know the wing runner actions and responsibilities. If you observe any deviations from the proper procedure, do not hesitate to stop the operation and discuss the issue.

1.4 USA Winch Final Takeoff Checklist

After the before takeoff checklist is complete (ABBCCCDE, CB SIFT or whatever you use), conduct the final winch takeoff checklist. It’s referred to as the “WINCH’N” checklist. The acronym refers to the final actions taken prior to launch.

1.5 USA Winch Pilot Training Record Supplement

This document contains notes and brief training discussions that follow the items listed on the operator training record. The information it contains may or may not have been previously covered in the training guidelines document.

2 Pre-operation

2.1 Glider tow hook position

There are three locations found on a glider for the release hook. Commonly the release will be located at the nose of the glider and called a nose hook. Another common location is just prior to the main wheel, which is called a cg hook. Less commonly the release hook will be found between nose and the main wheel, often referred to as a "chin hook". The glider flight manual may stipulate the use of each location is limited to a specific type of launch. In any case, for the winch launch, the nose hook is the least desirable and in most cases is discouraged for use.

The chin and cg release mechanism is normally found along the longitudinal centerline of the glider. In some cases it may be offset to one side. A release mechanism positioned off to the side of the centerline of the glider will cause a small amount of undesired lateral glider rotation during initial acceleration. The pilot must anticipate this movement and take corrective action immediately.

Some cg release mechanisms are installed inside of the glider wheel well. For this reason, and due to possible distractions during launch, gear retraction during launch is discouraged.

2.2 Glider cockpit setup

The winch launch proceeds at a rapid pace. For this reason it is important to diligently prepare the cockpit. Loose items must be stowed, proper cushions installed, flight controls and release mechanisms must be easily manipulated. The use of boom mikes is highly recommended. Any final checklists must be committed to memory or placed on a front panel placard in clear view of the pilot.

Make sure that any cushions used are firm and do not allow the pilot to move aft during initial acceleration. If a headrest is installed, it should be properly positioned and used for the launch.

2.3 Wing runner responsibilities

The Utah Soaring Association has specific duties set out for wing runner pre-departure actions. Familiarize yourself with the USA Winch Pre-Departure Ground Operations document. It can be found on the flight training web page, or ask a winch authorized instructor for a copy. The wing runner has greater responsibilities than during an aerotow. The wing runner tasks include verifying the canopies and spoiler are locked, the proper connections are made to connect the glider to the winch and the launch area is safe and clear. The wing runner commands the launch area, including crowd control and the arrival and departure of the retrieve vehicle. The wing runner also monitors local area traffic and conducts the operation accordingly.

While the PIC in responsible for safely commanding the glider, the wing runner is in a better position to determine that the launch area is clear and no traffic, people or obstructions are present. Either individual may terminate the launch at any time. The training of the wing runner is a serious responsibility and should not be taken lightly. Untrained individuals will not act as the wing runner.

2.4 Radio communications: Glider to winch

The PIC will communicate to the winch when the launch is anticipated within 2-3 minutes. This will give the winch operator the time to start and prepare the winch for the launch. This communication is not included in the USA Final Takeoff Checklist (WINCH'N) but must be made at the appropriate time. All other glider to winch communications are included in the WINCH'N checklist.

2.5 Radio Communications: Local area traffic

Winch launch communications and coordination with local area traffic is paramount. Almost all issues that arise during winch operations with local traffic can be avoided with proper advance communication.

The WINCH'N checklist contains a call to the local area traffic that a winch launch is about to commence. Make the call clearly. Wait for a response before making the next communication to the winch. Give the local area traffic time to respond to your announcement. Once the launch begins the cable may present a great danger to arrival and departure traffic. When in doubt, wait.

Some local traffic will not make proper radio announcements. This may be due to equipment or PIC issues. This is where the wing runner responsibilities become crucially important. The wing runner should have radio contact with the local area, as well as clear visual cues as to future traffic. That being said, do not rely solely on the wing runner to identify potential traffic hazards. Listen carefully to the radio during pre-departure preparations for any traffic announcing their intentions on the local unicom or multi-com frequency. Situational awareness is the key to predicting future traffic conflicts.

3 Cable

3.1 Weak link selection

Flight operations manuals, as well as FAA type data certification sheets, specify the maximum weak link that may be used for a particular glider. In some cases the specified weak link may be different for aerotow than winch launch. The weak link system manufactured by Tost is the most commonly used. The Tost system uses a color coding to identify link breaking strength. Do not use a weak link stronger than allowed by the glider manufacturer or regulatory body.

The Tost system includes a protective sheath, as well as the option to combine the primary link with a safety link. Do not use two primary links in a pair. Doing so will double the breaking point of the link. The Utah Soaring Association uses a single primary link in a sheath. The sheath has an inspection hole that allows for preflight inspection prior to launch.

3.2 Weak link replacement

Any damage, distortion or stress indications of the weak link require replacement. Tost also recommends the link be replaced after 200 launches regardless of visible condition. Weak link replacement is simple. Loosen the attachment bolt at each end of the sheath. Insert a new link and reassemble. Ensure when reassembling the sheath the slotted end will point towards the glider.

3.3 Check cable inspection

Prior to the first flight of the day a visual inspection of the cable must be performed. The easiest method is to have a trained individual positioned at the front of the winch. Attach the cable to the retrieve vehicle and pull the cable from the drum slowly. As the cable is drawn out, watch for abrasions, burns, knots and any other damage to the cable. Pay close attention to any older splices. With this method it is necessary for the retrieve vehicle driver and the person inspecting the cable to be in continuous contact. If there is any suspected damage to the cable, the retrieve vehicle should stop while the cable section is inspected.

3.4 Check parachute, strop, weak link and shackle

Another inspection prior to the first launch is to inspect the final assembly section from the cable end to the parachute attach point. Check the parachute for damage and tangled lines. Check that the cable section running through the parachute is taught and carrying the winch launch load. If the cable section is not taught, the parachute shroud lines will carry the cable load. Check the strop for abrasions and damage. Finally, check all shackles and the weak link for integrity.

3.5 Cable splicing

While it is primarily the responsibility of the winch operator to make any cable repairs, the Utah Soaring Association will train all pilots that use the winch to learn how to make proper cable splices. Ask any USA winch operator or winch qualified instructor how to make proper splices. Do not repair the cable without training. Many failed launches have occurred due to bad splicing techniques.

4 Briefings

4.1 Winch operator

Any successful operation starts with thorough initial briefings. The winch operator and glider pilot must discuss the conditions, the glider to be launched and any unusual training activities. When several successive launches are conducted, it’s possible to brief via cell phone or radio, but make sure both parties have the necessary information to make a safe launch and recovery.

4.2 Wing runner

The wing runner should be informed of any unusual launch characteristics of the glider. The wing runner will be checking for canopy and airbrake security. If the glider is not familiar to the wing runner, make sure they know how to check these items. If this is a training flight, provide the wing runner with any expected abnormal flight activities. The wing runner is responsible for the arrival and departure of the retrieve vehicle. If the glider will make an abbreviated pattern, you will want to delay the departure of the retrieve.

4.3 Retrieve vehicle driver

Include the retrieve vehicle driver in any unusual glider activities. Flight training activities have a tendency to place gliders on the airport surface at unusual places and times. The retrieve vehicle may become an obstacle to landing if the driver is not properly briefed.

5 Launch Operations

5.1 Airport procedures

Each airport has it's unique set of challenges. Day of the week, time of day and even seasonal differences will make a difference in the hazards for each launch. Do not assume that weather or traffic conditions will remain static throughout the day.

Most airports have prescribed traffic pattern procedures. Expect airport users to be unfamiliar with the operation. Before and after operations, take the time to talk to the principle operators at the airport so they know what to expect. If there are additional training activities or commercial operations (sightseeing, skydiving), acquaint yourself with their habits and policies.

If there is no permanent notice in the Airport/Facilities directory noting the presence of glider and/or winch operations, contact the airport manager several days prior to winch launching and ask for a NOTAM to be published.

5.2 Crowd management

Most glider activities involve several onlookers. These may be other glider pilots waiting to take off, waiting to be trained, or just familiarizing themselves with the operation. Many times inexperience people such as spouses, parent and children will be present. They will be unfamiliar with how to conduct themselves, others may be experienced, but simply not paying attention. Expect the unexpected.

The job of crowd management is primarily the responsibility of the wing runner. Obviously as the PIC you have a responsibility to ensure that the launch will proceed without obstruction. Be cautious. If there is anyone or several nearby people you consider a hazard, speak up. Stop the operation until you are comfortable.

5.3 Winch differences

Make sure you are familiar with the local winch characteristics. The winch at the current location may not be similar to the winch you either trained on or are used to. Winch horsepower, winch power control (speed or tension) and even density altitude can have a significant difference in launch characteristics. Pay close attention to whether or not the winch maintains cable tension or cable speed. Glider speed control is different for each.

One of the common causes of winch accidents is over rotation of the glider at liftoff and the ensuing horizontal stall/roll that occurs. If you are used to a strong winch, be prepared for a slower rotation, and a longer time for the glider to attain the full climb attitude.

5.4 Glider differences

Normally you will be launching in a glider with which you are familiar. When you have the occasion to launch in a glider that you have not flown off of a winch before, make every attempt possible to familiarize yourself with the winch launch characteristics of that glider. There can be significant differences.

Start with the flight operations manual. Almost all have at least a brief paragraph on the procedures to conduct a winch launch. Note the location of the release hook with respect to the centerline of the glider. Any offset at all will cause a swing in the glider at initial acceleration. If the glider sits at rest with the nose on the ground when the pilot is on board, discuss a gradual acceleration with the winch operator. Slamming the tail on the ground at launch is disconcerting, damaging and will lead to a loss of control.

Some gliders will have a tendency to pitch up at initial acceleration. Even if not discussed in the flight operations manual, be prepared for this possibility. Do not allow the glider to over rotate. Excessive speed during the initial launch is perfectly acceptable, over rotation is not. Allow the glider to establish the climb attitude on its own. During a normal launch, only a minor back pressure on the elevator control is necessary to coax the glider into a climb attitude.

5.5 Administrative duties

Prior to launch advise the winch operator who will be acting as PIC and the names of any passengers. If the payment of the launch will be made to someone other than the PIC, ensure the winch operator is aware. After release make a call to the winch operator and state the top altitude of the launch. The call may be made into the blind.

After all flights are concluded be sure to fill out the USA flight log for the glider in use. Make a note in the maintenance notebook of any discrepancies. If there are any major maintenance issues, contact the glider steward or the maintenance officer.

5.6 Communication: Winch/retrieval/wing runner

If conducting multiple flights, keep an ongoing conversation with all of the relevant parties. It's easy to get caught up in the repetitive nature of a multiple launch operation. As noted before, as the day continues, the weather changes and the local area traffic changes. If there are other people present, some may come and go. New arrivals may not get the appropriate safety briefings. Be on the lookout for new faces.

5.7 Predeparture operations/procedure

The Utah Soaring Association has designated specific tasks and procedures for the wing runner. Know the contents of the USA Winch Pre-Departure Ground Operations document. Encourage compliance. If the wing runner is not acting in accordance with USA policies, stop the operation, pull the release and start over.

5.8 Pretakeoff checklists

This is especially important during multiple training flights, commercial flights or any repetitive flight operation. Always complete the before takeoff checklist (ABBCCCDE/CB-SIFT) and the WINCH'N checklist. Do each checklist methodically and thoroughly. Even if you are conducting a singular flight in your own ship, treat it as if it was your first launch. Checklists prevent accidents.

5.9 Take up slack phase

When the PIC makes the call to the winch operator to take up slack, the final sequence to launch will begin. The winch operator will engage the drive and release the drum brake. As the cable is initially drawn onto the drum, all remaining slack will be taken out of the cable. The final call to the winch operator is the call that all of the slack is out, and the launch may begin in earnest. For final launch preparation after the call to remove slack, place one hand on the release control, neutralize the ailerons and make a final scan of the area ahead for obstructions.

5.10 All out phase

Time the "All Out" call to the winch so that the cable speed is accelerated just as the slack is completely out. This requires some timing on the part of the PIC. Do not wait for for all of the slack in the cable to be removed before making the call. If you do, the glider will be drawn forward at a slow rate prior to winch engine acceleration. This can cause wing drop, or the possibility of the glider

running over the launch cable. On the other hand, if the call is made prior to all of the slack being removed, the glider will accelerate too rapidly and cable overrun will certainly occur.

If the PIC is uncomfortable with anything during the pre-launch or launch itself, pull the release and call to the winch "Stop, Stop, Stop".

5.11 Initial acceleration

The start of the launch may be divided into four segments. During the initial acceleration there is a brief ground roll. This may last between three to five seconds. During this time the glider wings must be kept level, and little to no yawing motion. If the glider release mechanism is located to the side of the longitudinal center line, expect some yawing tendency, which must be controlled by rudder input. Do not try to stop any yaw with aileron input.

Do not allow the nose to rise too soon. The glider should lift off by itself with minimal input from the pilot. The average time between liftoff and full climb attitude should take three to five seconds.

5.12 Climb speed

The best climb speed during a winch launch is not listed in any manual. The speed will change, and depends on several factors. Generally 1.5 - 1.7 times the stalling speed will give reasonable results. The only speed listed with regards to climb speed is the maximum ground launch speed. The maximum ground launch speed will be less than the maximum aerotow speed.

If you exceed the maximum ground launch speed during the initial part of the launch, try to reduce the airspeed either through control input or directing the winch operator to reduce power. At low altitudes it is less risky to allow for a slight overspeed than to release. In fact, the stresses that may cause glider damage and/or weak link failure due to overspeed will happen at the top of the launch. Modest overspeeds below forty-five degrees on the arc of the launch are not overly concerning.

The glider may climb through one or more layers of vertical wind shear. The result will be a sudden increase in airspeed (increasing shear) or decrease (decreasing shear). Relay this information to the winch operator if it has not already been done.

5.13 Fast/Slow commands

If you notice an overspeed starting to develop, make a radio call to the winch operator to reduce power. The Utah Soaring Association uses the command "Slow, Slow, Slow" to indicate a desired power reduction. Conversely, if the winch is not providing enough power, the call "Fast, Fast, Fast" will direct the winch operator to increase winch power output.

Visual signals may be used as well. Lower the glider nose to indicate a desired increase in speed. Raise the nose for a power reduction.

5.14 Crosswind management

Anticipate glider drift by banking slightly into the wind. While a slight glider drift may not impact the launch safety, remember the cable will drift downwind after release. Cable drift can cause recovery issues as well as obstructing active taxiways and runways.

As with the climb through vertical wind shear, the glider may climb through one or more layers of horizontal wind shear. If the glider releases within one of these layers, as sudden cable drift may occur during recovery where none was expected.

5.15 Respond to crosswind commands

If the glider pilot has not acted to counteract the crosswind drift of the glider during climb, the winch operator will call with directions. The USA uses compass directions to fly. You may hear "Fly east" or "Fly west". Respond to these commands by banking the aircraft in the direction commanded. The winch operator will likely have the pilot fly to the upwind side of the centerline course so the cable will be retrieved on the centerline.

5.16 Power reduction/signal to release

Starting at approximately forty five degrees of arc, the winch operator will slowly reduce the power so it is at idle by the time the glider reaches the seventy degree position. The power reduction will reduce the possibility of overspeed at the top of the launch. It will also create slack in the cable. The air loads on the slackening cable will cause a bow to the rear of the glider. This should force a back release of the cable at the glider.

The winch operator may make a radio call signaling a countdown to release. If you receive this call, when the winch operator calls "Release" expect the back release to happen. If it does not, perform a manual release of the cable. Pull the release handle fully aft twice.

In some gliders, especially those with both a nose hook and a CG hook installed, the individual hooks do not open at the same time. The Grob Twin Astir is a good example. The CG cable release will not occur at the same point in travel of the release handle as the nose release. A pull further aft is required.

6 Launch Failures

6.1 Critical altitude selection

One of the first tasks you must do to prepare for a winch launch is to select a critical altitude. The critical altitude is the highest altitude you may experience a launch failure and continue to land straight ahead. Several factors go into determining a critical altitude including runway length, headwind, and even pilot proficiency. Keep in mind the critical altitude may change during the day if conditions change.

Once a critical altitude has been selected, it does not absolutely define the proper launch failure recovery procedure (i.e. land straight ahead or turn). After re-establishing flying speed, if there is runway available to land straight ahead, do so.

6.2 Zero g maneuver

If you have a launch failure the first action is to perform the zero g maneuver. The zero g maneuver will accomplish two things. First, it will place the glider in an attitude for airspeed recovery. Additionally it will place the glider in an attitude where the pilot will be able to see the runway remaining. Irrespective of your position with regards to a pre-determined critical altitude, if you are able to land straight ahead, DO SO! Again, if you are able to land straight ahead on the remaining runway, it is the safest course of action.

When a launch failure occurs, the first course of action is to lower the nose of the glider. The pitch should be adjusted so the nose is as far below the horizon as it was above the horizon at failure. As you are lowering the nose, note the altitude and say it out loud. This will make clear your altitude with respect to the critical altitude.

You want to lower the nose rapidly. Do not delay. The maneuver is referred to as the zero g maneuver because you want to achieve a zero g load as you lower the nose. This action will minimize drag and the glider will accelerate to flying speed the fastest. Once the nose of the glider is as far below the horizon as it was above the horizon (prior to pushover), hold the attitude. Wait for the glider to regain normal approach airspeed.

With the nose in the recovery position, you will have ample time to survey the runway remaining as you wait for the airspeed to return to normal gliding speed. Determine if you have enough runway in front of you to land straight ahead. If there is runway remaining, the safest course of action is to land straight ahead. If there is insufficient runway remaining in front of you, you will have to turn. Remember, take no action until you have regained flying speed!

In addition to verbalizing the altitude at launch failure, some pilots will call to themselves “airspeed, airspeed, airspeed”. This is a good habit. Remember, the second leading cause of accident after a launch failure is not maintaining flying speed. Do anything you can to ensure you maintain the appropriate airspeed.

6.3 Weak link failures

The Tost link will fail when exposed to tension levels above specific design limit. Tost provides links that will fail at different load limits. Color coding indicate different design limits. Reference the flight operating manual to determine the weak link selection for your glider. Use caution, the prescribed link may have changed since the original printing of the manual. These changes are reflected in technical notices from the manufacturer. Common sources for current weak link applications are the British Gliding Association (BGA), the Gliding Federation of Australia (GFA) and the FAA Type Data Certification Sheet.

Inspect the weak link prior to each launch. Look for distortion in the center hole or cracks in the link itself. The recommended replacement interval for weak links is 200 launches. The USA uses a single link system. If you encounter an operation that utilizes a safety link as well as the primary link, ensure that an actual safety link is used, not a second primary link. The safety link can be identified by oval shaped attachment holes at each end.

During launch, a weak link failure is obvious. The link will break in the same manner as a cable. It failure is abrupt. Accomplish the zero g maneuver and land safely.

6.4 Cable breaks

A cable break and a weak link break will seem the same. Obviously, pilot reaction is the identical for each. Lower the nose, regain flying speed and determine the safest landing maneuver. Remember, it is safer to land straight ahead unless there isn’t enough remaining runway to do so.

Cable breaks rarely occur without reason. The break will happen due to poor splicing, a knot in the cable, burning/melting of the cable or excessive cable abrasion. Launch failures due to cable break can be prevented by an inspection prior to the day’s operation.

6.5 Winch power failures

Winch power failures can be either abrupt or gradual. In some cases, the winch may simply quit. On the glider end the indications are much as a cable or weak link failure. The loss of power is obvious. The only difference is that there may not be any audible indications that accompany a weak link/cable break. One major difference is that until (or unless) the cable connection back releases form the glider, it will remain attached. Be sure to perform a manual release.

More frequently, winch power loss will be more subtle. The power reduction will be presented to the glider end of the cable as a simple lowering of tension available to the cable. The only indication the pilot will be a slower airspeed at normal climb attitudes. Fly the glider accordingly. Do not rush to

release. Depending on the severity of the power loss, it may be prudent to maintain the climb and accept a lower top altitude. An early release is called for when the glider simply cannot climb, or the winch operator orders a release.

6.6 Communication failures

Good communication is essential to a safe operation. Do not proceed if communication between the launch site and the winch cannot be maintained. Direct communication between the winch and either the PIC or the wing runner is necessary to continue. A discrete frequency is best as to not block (or be blocked by) local traffic. Local traffic awareness is essential though. Maintain at least a listening watch with the area traffic.

Communication failures affect the operation depending on their nature. The most serious of which is failure during the initial launch. If a failure occurs between the call to take up slack and the call for winch takeoff power, pull the cable release and attempt to communicate to the winch that the launch has been aborted.

6.7 Excessive climb speed

The glider manufacturer designates a maximum airspeed during ground launch. Glider loads increase with airspeed and structural damage will occur once a certain load limit is reached. There are two mechanisms in place that prevent glider damage. The first is the weak link. It will fail long before the structural limits are reached. The second protection is maintaining airspeed below the maximum ground launch speed. If the glider airspeed is kept below the maximum ground launch speed damage will not occur.

It’s important to understand the mechanics of loads on the glider during launch. For a better understanding of this subject, there several research papers available. For this document, it is sufficient to state that the biggest danger for overload due to excessive speed will occur during the final segment of the launch. When the angle between the winch and the glider exceeds forty five degrees, load dangers due to overspeed are a concern.

With this in mind, minor speed excursions above maximum ground launch speed are acceptable during the first part of the launch. The PIC must make the determination as to which is riskier; abandon the launch at a low altitude or accept a minor speed excursion and make the appropriate correction. This is not to say that excessive speed should be accepted as a natural course of the launch. If excessive speeds are encountered on multiple launches, the launch process should be modified.

If the airspeed exceeds the maximum ground launch speed during the final portion of the launch, release. In most case the weak link will fail, but if it does not, pull the release handle and operate the glider appropriately.

6.9 Launch failure: Below critical altitude

If the launch fails below critical altitude, perform the zero g maneuver and land straight ahead. Do not rush. It will take time for the airspeed to build. You must allow the speed to build to normal approach speed prior to spoiler deployment. Remember, spoiler activation will raise the stall speed by five to six knots. Unless runway length is a factor, delay extending the spoilers until in the landing flare.

You will have ample room to safely land the glider. A common mistake is to allow the glider to slow prematurely, resulting in a hard landing. Remember, once you have reestablished normal approach speed, the landing is exactly the same as any other landing you have ever made. Take your time and do it right.

6.9 Launch failure: Above critical altitude

Failure to maintain aircraft control after a launch failure above critical altitude is the second leading cause of accidents during ground launch. The reason is simple. The procedure calls for a turn downwind after the failure. Pilots involved in these sort of accidents fail to either regain, or fail to maintain flying airspeed prior to the turn. Typically, flying airspeed is regained, but then lost during the turn or shortly thereafter. It is essential to regain flying speed prior to initiating the turn.

After you have regained flying speed, and once you have determined that there is insufficient runway remaining to land straight ahead, the initial turn will be downwind. For those of you used to aerotow, this may seem counter intuitive. The difference is that with an aerotow return for landing, the glider makes a return to land downwind. This will involve slightly more than a direct course reversal. The purpose of turning into the wind during aerotow launch failure is that the glider does not get blown downwind.

If a turn is required after a ground launch failure, the glider will perform a complete (albeit possibly brief) pattern. This will place the glider on a base leg at some point, with a ninety degree turn to the arrival runway. The safest course of action is to place the glider in an environment where there is a headwind, not a tailwind. Thus the initial turn after failure will be downwind.

The turn must be done with a steep angle of bank. At a minimum, use forty-five degrees. Maintain coordination. Continue the turn until you have completed 180 degrees of turn. As you approach the 180 degree point, check your altitude, if you are higher than 200 feet, roll the wings level. This will place you on a downwind leg to your arrival runway. Ensure your heading will cause a track parallel to the runway.

Maintain the downwind leg until you are in a normal position to land or at 200 AGL, whichever comes first. At a minimum of 200 AGL, or at a position to make a landing at the approach end, initial a steep, coordinated turn back to the runway. Fly the glider and make a normal landing.

If you are at 200 feet when you reach 180 degrees of turn after launch failure, continue the turn back to the landing area. Do not blindly make a 360 degree turn. If there is thermal activity, you may end up in the same position as you were at the launch failure, except at a higher altitude. Check your altitude as you complete 180 degrees of turn. At that point make a decision to continue the turn or fly a downwind leg.

Make all turns coordinated and at a constant airspeed. Make radio calls to announce your intentions only if able. Above all, fly the glider! Remember, you are now making a normal approach and landing.

6.10 Delayed winch power reduction

Occasionally the winch operator will misjudge the power reduction at the top of the launch. While it is difficult to determine your position with respect to the winch, you will notice that the glider has either stopped climbing, or the incremental altitude gains are minimal. Without a winch power reduction rope tension will be maintained until release. This will cause a hard release. It’s possible that the cable will spring back toward the winch causing looping on the drum. While this is not particularity hazardous to your flight, there will be consequences for future launches. It is also hard on the glider release mechanism.

If you notice that the glider has reached the top of the launch and there has been no reduction in winch power, ease the glider nose forward to unload the wings and rope tension. As the same time pull the cable release handle twice. If you are in radio communication with the winch, announce that you have released.

6.11 Cable failure to release

An extremely unusual circumstance is when the cable fails to release from the glider. Obviously this is a very dangerous situation. All winches should be equipped with an emergency guillotine. This mechanism should be verified functional at least once each month. The winch daily preflight must include a visual inspection that the guillotine system is not compromised.

Some clubs have operated in the past using cable cutters or an ax instead of a guillotine. This practice is highly discouraged. Fortunately such operations are very unusual.

If the glider fails to release the only option will be for the winch operator to activate the guillotine, thus severing the cable. You will make the remainder of the flight with up to 2500 feet of cable attached to the glider. Attempt to stay within the airport boundary. This will reduce the possibility of the cable catching on obstacles. Fly a slightly faster approach. Do not attempt to thermal.

7 Area Management

7.1 Bystander safety

At all times be aware of individuals at the launch site. Some may be experienced pilots, some may not. Regardless of experience, use caution when there are people standing near the operation. Both the PIC and the wing runner are tasked with bystander safety, but do not rely on the wing runner to control the crowd. Be overly cautious and directive with your requests to bystanders.

7.2 Area traffic awareness

This subject was discussed earlier in this document but is worth repeating. Winch launch communications and coordination with local area traffic is paramount. Almost all issues that arise during winch operations with local traffic can be avoided with proper advance communication.

In addition to the cable acting as an obstruction during launch, it also poses a great threat as it is retrieved to the winch. Don’t put the winch operator in a position where the cable may fall on an aircraft!

7.3 Obstruction awareness

Obstructions come in many forms. They may be movable, such as aircraft, surface vehicles or people. They may be permanent, such as buildings, trees or antenna. Plan your operation accordingly.

7.4 Retrieve vehicle management

The wing runner is in charge of the retrieve vehicle movement. The cable retrieve is the most limiting factor for the timing of subsequent launches. For this reason there is a temptation for the retrieve vehicle to start down the runway immediately after glider departure. Allow this only if there is clear space for the glider to return for a landing. Remember, if you make a 360 degree turn to return after a launch failure, the driver of the retrieve vehicle will not be able to see you. Most likely you will be approaching the vehicle from behind during your final approach to land.

Driving the retrieve vehicle can be a hot, dry and dusty task. Show your appreciation. Make it well known that you realize that the job can be less than fulfilling. Making a personal connection to the retrieve driver will help them keep their head in the game during multiple launch operations.

7.5 Weather awareness

By definition, weather is dynamic. Conditions may change rapidly. Keep a close check on wind direction. Also watch for weather developing outside of the airport boundary. It may be coming your way!

You will experience wind and turbulence changes as you climb during the launch. Some of the changes will remain static throughout the day; others may disappear during the time of one launch. Modify your launch plan accordingly and be prepared to readjust if conditions continue to change.

8 Human Factors

8.1 Judgment

Judgment comes from knowledge and experience. The purpose of initial training is to provide both. Continued experience and re-training help provide a basis for judgment. There is good judgment and bad judgment. Our goal is to provide training that allows for a safe operation as well as build an operational environment that promotes good judgment.

8.2 Decision making

Despite all of the banter about individual motor skills, the prime factor in safe operations is decision making. Accidents are caused by poor decisions. Identifying a developing poor decision chain is the key to preventing accidents. It’s true that some individuals have better motor and/or mechanical skills, but that talent does not necessarily indicate good decision making. Practice conscious, logical decision making that promotes a safe operation.

8.3 Risk management

Every time you step into a glider, you are presented with hazards. How you think each individual hazard may affect the operation is called risk. The actions and decisions you make are risk management. Risk management plays an important part of our everyday life. During glider flights even more so. In aviation, the consequences of poor risk management can be severe. Consciously assign a level of risk to each hazard. Look for events and situations that may develop negatively and affect the safety of your flight.

8.4 Situational awareness

As you gain experience, familiarity with visual, auditory and tactile inputs allow you to expand your awareness of a greater amount of information. Said another way, as you gain experience, you notice more. When you first start practicing any new skill, your ability to take on additional simultaneous tasks is limited. Understand this limitation and act accordingly.

The flip side is that as you gain familiarity, you start to make assumptions based on past experience. While this can help you expand your awareness, it also is an assumption. Unverified assumptions will lead to errors.

8.5 Self discipline

Develop habits that will allow you to catch errors and use them. Error trapping is an important part of maintaining a safe operation. Don't allow yourself to take short cuts. It may seem overly cautious and repetitive, but following a familiar pattern will keep you out of trouble.

Use self-discipline to practice and advance your skills. If you follow a predetermined plan, the ability to modify and readjust will be easy.