Hazards of Cross-Country Flying

Nov 2024

One of the requirements for the SSA C badge (SSA's pre-cross country phase) is to have knowledge of:

- Cross country procedures
- Sailplane assembly and disassembly & retrieve
- Hazards of cross country flying

Hazards of Cross-Country Flying

Risk Level

Statistics from Germany and France indicate that soaring has a risk level between general aviation and hang gliding, or about a 2% risk of dying per 1000 hours – about 200 times greater risk than commercial aviation.

Source: Clemens Ceipek: Chess in the air https://chessintheair.com/the-risk-of-dying-doing-what-we-love/

Risk Statistics

What is "so dangerous" about it?

https://chessintheair.com/does-soaring-have-to-be-so-dangerous/

40%: **Pilot mistakes: Improper decision making** – allowing safety margins to erode until it was too late. Examples include delaying the decision to land (at an airport or in a field), relying on an engine, flying too close to mountainous terrain, failing to stay within gliding distance to a save landing area, failing to interrupt a final glide when the altitude was not sufficient to reach the airport, failing to descend from a wave flight before the cloud layer closes, etc.

Factors:

- Risk- Reward considerations
- Perception and evaluation of risk
- Temptation
- Hazardous attitudes (Aeronautical Decision Making AC 60-22)
- Complacency

30% **Improper handling of the aircraft** Accidents that could have been avoided in the moment by good Basic Piloting Technique alone. Examples include: failing to maintain sufficient airspeed during a winch launch, flying uncoordinated through a turn, cycling the gear instead of extending the airbrakes, not knowing how to stop a spin at altitude, getting out of position behind the towplane, etc.

Even the most basic piloting error accidents are rarely caused by true beginners! The median level of experience of pilots involved in these accidents is 416 flight hours.

Factors:

- Overconfidence and Complacency
- Inexperience
- Inattention
- Unfamiliar aircraft

12%: **Pre-Flight Negligence** Accidents where good piloting technique alone was of no help to prevent a bad outcome. Examples include: assembly mistakes such as failure to connect the controls and/or conduct a Positive Control Check (PCC), failure to go through the pre-flight checklist, failure to communicate the presence of water ballast to the tow pilot, etc. A very important special case of pre-flight negligence is the failure to have a specific pre-takeoff emergency plan. Many premature release accidents were caused by the pilot wasting precious time and altitude before deciding what to do and where to land.

Factors

- Improper assembly
- Failure to consider a specific pre-take off emergency plan before launch
- Evaluating weather- looking for the possibliy of overdevelopment and thermal day termination predictions
- Presence of TFRs or other airspace restrictions

6%: **Insufficient Situational Awareness** Most but not all of these were mid-air collisions that could have been avoided. Insufficient situational awareness might mean inadequate radio communications, insufficient look-out, or simply the failure to observe warnings that are there in plain sight.

The mountainous areas and deserts of the Western United States are often completely unlandable, and airports may be 50 miles or more apart. High terrain may be in the way between your position and the nearest landable area even though your flight computer shows it to be within glide.

A sustained 2 knot sink or a 25 knot headwind will cut your glide ratio in half. Severe sink may degrade the attainable glide ratio of a 40:1 glider to 10:1 or even less. Bad weather may move in and make your only landable area inaccessible, etc.

Midair Collision

Flying cross country often involves flying in areas that intersect arrival and departure routes for commercial airports. Being equipped with a transponder and ADS-B Out is certainly an aid to being seen and reducing the risk of collision but it does not absolve the glider pilot from being aware of this threat.

Operations within a Mode-C Veil also presents increased risk of interaction with jet traffic as it encompasses the normal descent profile for these aircraft into Class B airports. However, arrivals and departures into these airports usually fly along prescribed routes known as Standard Terminal Arrival Routings (STARs) and Standard Instrument Departures (SIDs). Looking up and being familiar with the

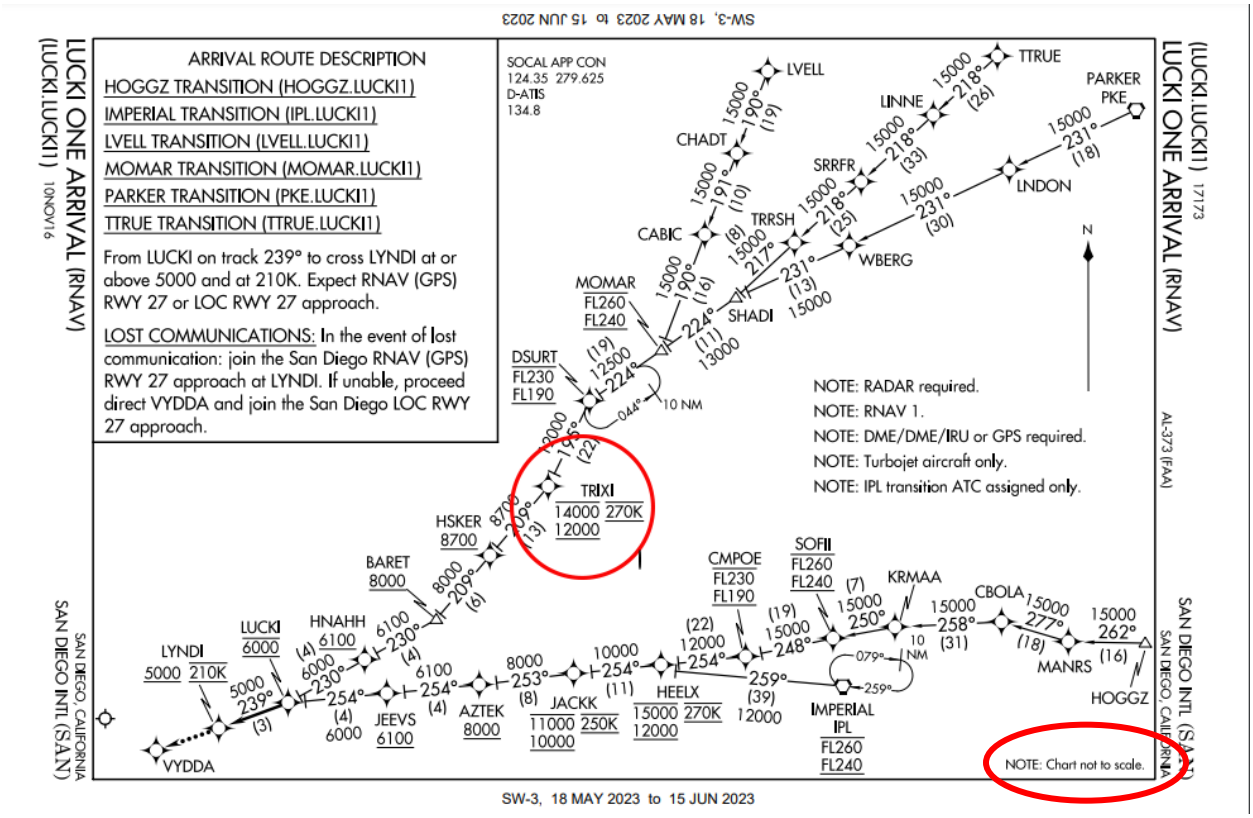
actual routings in your area and the altitudes that arrivals are expected to cross certain waypoints at can provide an increased awareness of where the greatest risk exists.

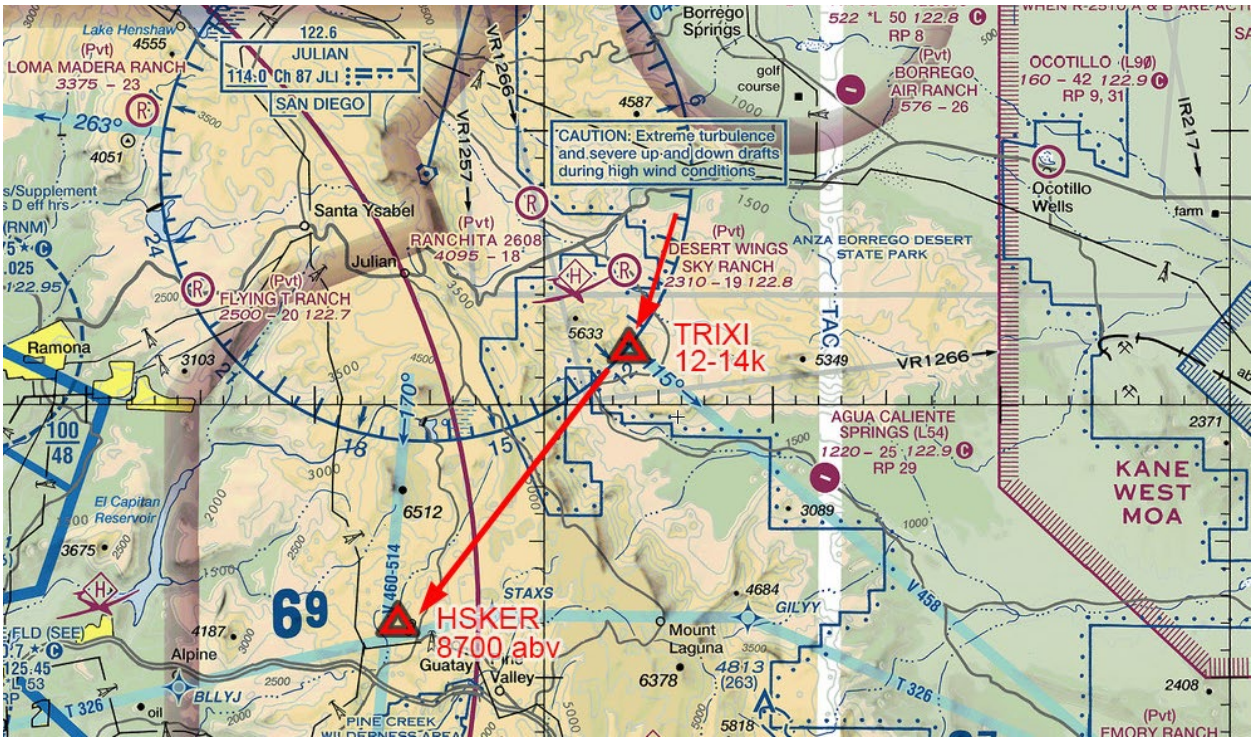
Websites such as AirNav.com and SkyVector.com allow the viewing and downloading of these as well as the instrument approach procedures to any airport. You can then correlate the waypoints on the chart with locations on your sectional or mark them as waypoints in your navigation computer. AirNav.com allows for the easy lookup of any fix and by name to obtain the Lat/Long and nearby airports. SkyVector will draw them on the chart if you enter them in the flight planning entry box.

Jet traffic often climbs out at a steeper angle than arrival traffic descends. Consider the particular arrival path to asses the origin of the threat. As a rule of thumb jet traffic likes to descend on a profile of about 3 miles per thousand feet (18:1 glide ratio). This explains the geometry of the 30 mile Mode C vail at 10,000 feet.

SID and STAR charts do NOT usually depict landmarks that make it easy to correlate with a sectional chart. Some effort may be require to determine where the threat exists. Also, the charts are often not to scale, therefore a 20 mile segment could appear shorter than a 10 mile segment if it helps fit on the chart.

The example below depicts an arrival to San Diego airport.

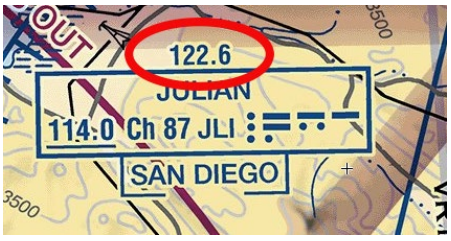




Remember also that above 10,000 MSL increased cloud clearance requirements are in place due to the faster speed of aircraft above that altitude as they're not constrained by a 250 kt speed limit. You must assume that these aircraft are not looking outside for difficult-to-see gliders that they do not suspect are there.

When operating in potentially high traffic areas, ATC can help provide traffic advisory and separation from known traffic by providing *flight following* services.

You can obtain the frequency to call for this service by looking on the control tower frequency tabs of the sectional or by calling Flight Service on 122.2 or the frequency on top of a VOR comm box using the callsign below it. (e.g., San Deigo radio).



For expanded information and actual communication examples see the YouTube video Flight Following for Gliders

Other in-flight Risks

Long high-altitude flights present certain risks even when everything is going right

- Hypoxia – monitor O2 saturation and use oxygen starting below the required FAR minimums
- Hypothermia – It is often 3-5° cooler per thousand feet at altitude. Feet especially can get quite cold as they are often not in the sn
- Dehydration - bring plenty of water, for the flight and any land out recovery time
- Sun exposure – hat, sunblock , and sunshade for landout
- Fatigue - fatigue can affect judgment in much the same way as alcohol. Proper nutrition, and prior sleep are essential for optimum performance.

Landing Out Risks

Landing out presents challenges, especially in the event of an off airport landing.

Physical field condition risks:

- Wires – both fences on the surface and difficult to see utility wires on approach
- Surface conditions and hidden obstacles (holes, rockpiles, other objects obscured by vegetation)

Environmental field conditions

- Temperature - hot or cold. You could potentially be there for hours. Are you prepared to stay warm or cool?
- Long duration until pickup – food, water, shelter
- Communications – lack of mobile phone coverage - (InReach/SPOT satcomm devices or radio relay to aircraft may help)