

AEROTOW OPTIONS

The BGA Safety Team considers how to prepare for aerotow launch failures

■ Clubs can obtain printed copies of Safety Briefings from the BGA Office.

CONFIDENCE IN PLAN B MAKES IT EASIER TO REJECT PLAN A

Both the glider and tug pilots' 'eventualities' should include decision points and actions (Mark Layton)



WHICH eventualities do you assess before an aerotow launch? How much have you prepared for or practised them? How do they compare with the eventualities you consider before taking a winch launch?

Aerotows were historically more reliable than winch launches. Long-established engines mounted on tried-and-tested airframes rarely failed, whereas cable breaks and component failures with home-made winches were fairly common. Today's professionally-made winches and polymer cables are more dependable. Nonetheless, we continue to expect winch launch failures, have plans to recover safely from any stage of the launch, and practice them regularly.

In contrast, some pilots' plans for aerotow failures are to 'travel hopefully' [1], spotting possible fields during the launch – not easy while concentrating on following the tug [2] – while trusting that any low failure will be high enough to return to the airfield. Since aerotows do sometimes fail, this has resulted in a steady trickle of broken gliders and injured pilots when decisions were rushed or options limited. Recently, several pilots who stalled when attempting low turns back to the airfield have been very lucky to walk away from accidents that onlookers expected to have been fatal.

Aerotow failures

Aircraft engines lose power for a variety of reasons, the most common being running out of fuel and taking off with carburettor

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heating engaged – not helped by notoriously unreliable fuel gauges and awkward engine ergonomics. However, they can also suffer mechanical and structural failures, and there are numerous problems to which fuel, oil, ignition, coolant and electrical systems are susceptible. Many of these mechanisms can result in partial, progressive or intermittent failure of the aerotow launch.

Even if the engine works as advertised, take-off performance can be poor. Long grass, wet ground, mud-filled wheel spats and forgetting to release the parking brake can impede acceleration, as do open airbrakes and other errors at the glider end. Engine performance can be affected by air temperature and altitude [3], while take-off distances and climb rates are poorer with heavy glider-tug combinations, uphill slopes and tailwinds.

Launches have failed because the towrope or its weak link broke, the glider pilot released inadvertently or in mistaken response to the tug wagging its rudder, or the tug pilot released to avoid an upset or an obstruction in the take-off path.

Launch failure eventualities

For a winch launch, you can generally plan your responses to eventualities at the launch point. At most sites, they'll involve landing back on the airfield with which you're very familiar, and the options will usually be visible from the launch point: land ahead if it's safe to do so [4] and, for the case that it isn't, choose the turn direction according to the airfield geography and wind conditions. Unless the site is particularly tricky, planning can be left until your pre-flight checks.

Aerotows are different. A low launch failure will usually mean landing away from the airfield, where obstacles and field size could make the choice complex. We can't see these options from the launch point, so it helps to understand and rehearse

them beforehand. Whereas the choice of landing area after a low winch launch failure should be simple, aerotow failure at a similar height could require swift thinking and manoeuvring. Aerotows can also go wrong slowly, allowing situations to develop and deteriorate without any clear event to prompt action. Finally, any practice is likely to have been done at a height that allowed a return to the airfield, leading to false expectations and reinforcing the natural tendency to accept risk if there is also a prospect of full recovery.

Prior preparation and practice can put the pilot in a far better position to deal with such eventualities. Club guidance material can support individual preparation, which should include setting decision points and the actions to be taken should the launch fail or deteriorate. Options can be explored and practised in simulators and motor-gliders.

As inspiration, one report concluded that, after engine failure, "The pilot continued with the pre-briefed failure profile and landed uneventfully in a field that had been carefully checked out on foot some days prior to the incident." If you have confidence in Plan B (a field landing, say) then it's easier to reject Plan A (the launch) if it goes wrong.

Long-term preparation

As is common at mountain and ridge-top sites, clubs can use local wisdom to identify potential landout fields for different launch directions and compile briefing material for their pilots. Google Earth and other aerial maps can be very helpful, and drones can be an easy way to produce further images. Trees and other obstacles can be assessed from the air and on foot, and a cooperative landowner may be willing to trim trees or make other helpful adjustments.

Back at the airfield, it can be useful to identify or create decision point landmarks by which the tow should be abandoned if the tug and glider are not airborne or other criteria are not met.

From knowledge of tug performance, etc, clubs can set general criteria for launches to proceed. There may be conditions in which, for example, heavy two-seaters will not be launched or a more powerful tug is required. First Flights should not be attempted if the conditions present significant risk [5].

Pilots can then study the briefing material and club policies at their leisure, visit fields for a first-hand view, and keep an eye on their state whenever they have spare time aloft. If aerotow failure options are tricky,

clubs may wish to train their instructors and pilots in the expected decisions and actions.

Daily preparation

It's a good idea to monitor possible landout fields, which could be affected by livestock movements and crop growth or harvesting. Once the day's weather forecast is known, field options can be reviewed and the airfield setup planned. Clubs and pilots can then choose decision points, and set strategies for handling First Flights, heavy gliders, etc.

Before and during the launch

After checking that the combination of tug, glider, launch run, weather and field options is suitable – and pushing back to extend the run or switching to another tug if needs be – both the glider and tug pilots' 'eventualities' should include decision points and actions. These might include the point at which the launch should be abandoned if not airborne, the minimum height at which to consider a turn, or, as tug pilot, the conditions that would prompt you to release the glider, or allow you to continue along a given route.

During the launch, both pilots should monitor decision points and be ready to release if progress is inadequate [6], keeping in mind that performance can change from launch to launch. It may be possible for the glider pilot to look out for field options during the launch, but the focus must be upon maintaining position and avoiding a tug upset.

Tim Freegarde and the BGA safety team

THE PILOT LANDED UNEVENTFULLY IN A FIELD THAT HAD BEEN CHECKED OUT ON FOOT SOME DAYS PRIOR TO THE INCIDENT

■ More information on safe aerotowing, including advice for planning First Flights, can be found on the BGA website [2,3,5].

- [1] *Hopefully is not an option*, S&G, Oct/Nov 2021, pp66-67 <https://tinyurl.com/flyright2308>
- [2] BGA Safe Aerotowing <https://tinyurl.com/flyright2309>
- [3] BGA Aerotow Performance <https://tinyurl.com/flyright2310>
- [4] BGA Safe Winch Launching <https://tinyurl.com/flyright2311>
- [5] BGA Managing Flying Risk <https://tinyurl.com/flyright2312>
- [6] CAA *Clued Up: Rejected Takeoffs* <https://tinyurl.com/flyright2313>

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- *Why it is good to think ahead* (Aug/Sep 19)
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- *A fun but safe introduction* (Dec 19/Jan 20)
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- *Act when the launch fails* (Dec 21/Jan 22)
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