

What the GNZ Operations Team is Talking About . . .

A summary of key items discussed at the Operations Team on-line meeting on 5 July 2022.

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1. Incident Reports for June - July 2022

- aborted takeoff in 20 knot cross wind, the into-wind runway was not available - long grass
- near miss with power plane taking off and following unexpected departure route
- launch abandoned by tow pilot on ground after sensing that the glider had released
- airbrakes not locked on takeoff, partly opened during tow, radio call from tug not received
- wheel-up landing on grass after expediting landing to stay ahead of parachute descents
- ASI found to be not working - pitot tube inserted in wrong hole in fin - not labelled
- radio in twin found to be transmitting but not receiving - not checked prior to launch

Commentary on Selected Incidents

Aborted Takeoff in Crosswind: The site is close to a long ridge, so pilots are keen to fly when the wind is blowing strongly in a favourable direction. The large grass airfield does have a runway which is very close to the favoured wind direction, but for most of the year it is "closed" to allow grass to be grown and harvested for income by the aerodrome operator. Using the open runway meant a strong crosswind was present, exceeding 20 knots. The maximum demonstrated crosswind for the glider was 11 knots. The wing runner was inexperienced, and let go before aileron control was achieved. The tow pilot reported a strong gust arriving just as the "all out" was given. The pilot aborted the launch after the downwind wing dragged along the ground. While this incident resulted in no harm it's clear that closing an active runway to generate revenue compromises safety.

Near Miss with Power Plane: The glider pilot was about to join downwind when a power plane turned right following the published departure route, but deviated from the "indicative" route marked on the AIP plate chart, and a near miss occurred. It's possible that a single radio call was missed, but it's still important that all aircraft adhere to their normal movement patterns and use standard radio terminology around an aerodrome that is shared by gliders and power planes. This incident is subject to further investigation.

Tow Plane Incidents: After the recent fatal crash of a tow plane after an upset there are more aerotow incidents being reported. In one case the tow pilot aborted the launch because he sensed that the glider had released. In the second, the tow pilot tried to use the radio to signal that the glider airbrakes had opened slightly, but the radio call was not received by the glider pilot. The standard rudder waggle (which is hard for the glider pilot to ignore) was not used. The Ops Team wondered whether some complacency has started creeping into aerotow launching, and encourages pilots to keep following our established procedures.

2. Out of Position on Aerotow

The Ops Team recently received a submission as follows:

I wrote to you some time ago expressing my concern that the "*I cannot release*" signal in which the glider moves out to the side of the tow plane and waggles its wings is, in my opinion, both dangerous and unnecessary.

My view (as previously mentioned) is that should a glider not be able to release the first course of action should be to use the radio. In the highly unlikely event that both the radio and the tow hook were to fail at the same time, the best course of action would simply be to hang on. Eventually the tow pilot should work it out and invoke the standard procedure. It is my opinion that if the tow hook were to fail, the pilot is in a stressful situation and is now required to significantly increase that stress by performing a dangerous and unnecessary manoeuvre.

Your reply at the time was that there were still some gliders flying NORDO and therefore the exercise should remain.

In the light of the recent fatalities caused by lateral out of position accidents I am writing to you to formally request that the operations team urgently review this decision. Whilst I understand your original response, my view is that the existence of NORDO gliders is a poor reason to continue with a dangerous exercise. It is 2022. It is time to mandate the use of radios.

The Ops Team reviewed this request and noted a tow release hang-up would typically occur at the normal release height, not close to the ground (unless being waved off by the tow plane due to an engine failure, for example). Furthermore, a radio can fail to work properly, or not be heard - there were two instances of radio failure reported in the last six weeks, just to rub this point home. We need the backup of the "move left and waggle wing" signal, but without being wildly off to the left.

The Ops Team then considered what would count as "out-of-position on tow." We concluded that - in the light of recent incidents and other feedback - the centreline of the glider should not be allowed to move sideways any further than the wing tip of the towplane, nor higher than the highest part of the towplane.

If either was to occur then the glider pilot should consider themselves out-of-position and release immediately. Similarly, an out-of-position glider combined with a slack rope about to jerk tight could lead to the towplane losing control, in which case the glider pilot should release before the rope jerked tight.

One of the ROO's remarked, "Don't try and manoeuvre back into position if you get beyond the wing tip - an upset can happen so fast that it's not worth the risk!" These limits would apply on the ground (during the takeoff roll) as well as in the air, and would also apply during the aerotow exercises of "boxing the wake" and rehearsing the "I cannot release" signal.

One consequence of this is that new pilots should not be permitted to fly the aerotow launch until they can competently handle the glider - while maintaining a good lookout. This stage is easily recognised when the pilot can land the glider smoothly and without prompting. Aerotow competency is quickly acquired after this, so overall training progress is not held up by a lack of practice at aerotow.

A second consequence is that if the air is so turbulent that you cannot stay within these limits on tow then you (and your glider) probably shouldn't be flying in such extreme weather conditions.

3. Eventualities Check List

There is still some confusion about how to apply the "Eventualities" item in the pre-takeoff checks. The underlying premise is that a small number of events can happen so quickly during the launch - and can result in a serious or fatal crash - that it's worth taking a few seconds to briefly dwell on each possibility and "preload the brain" so that the appropriate response can be made instantly.

Once each item has been understood by the pilot then - during training - it's not necessary to recite a whole paragraph while sitting in the cockpit waiting to launch. Just a few words - and a couple of seconds of mental reflection - should be sufficient.

The "Eventualities" document in the pilot training program has been redrafted to separately describe what to *Recite*, what *Action* would be required, and the *Reason* why the item is on the list. Note that for aerotow the above limitations on lateral and vertical divergence have been included.

4. Tow Pilot Forum

David Hirst is organising a national forum for any tow pilots interested in discussing their concerns. Invitations have been sent out by the Regional Operations Officers. We would hope that at least the Chief Tow Pilot from each club would participate.

Meanwhile Peter Thorpe from Auckland Aviation Sports Club at Whenuapai has kindly agreed to manage a project to provide improved rearward visibility from the tow plane. Optical (mirror, periscope) and electronic (camera + screen) options are being considered. Please contact Peter if you might have something to contribute. The idea is that the tow pilot could more readily detect when the glider was out of position and/or there was a serious bow in the rope - and release the glider if a hazardous situation seemed to be developing.

5. Complacency and "Normalisation of the Extreme"

Comment was made that a number of recent incidents (and accidents) happened because of deviation from normal procedures. This phenomenon is identified in the Human Factors literature, including in the Gliding NZ Study Guide used to prepare pilots for the XCP Certificate.

Many of the incidents involved a failure to check that everything was as it should be prior to launch. Is the glider assembled correctly (including pitot tube in correct hole)? Is the radio working on both transmit and receive, from both seats? Are the airbrakes closed and locked? Have all likely *Eventualities* been adequately identified and mentally rehearsed?

To add to this, a submission was received from an experienced instructor after the last safety bulletin, who commented:

We need to be more vigilant about how we conduct our aerotow operations. The challenge is to get it through to all of our pilots on both ends of the rope. Unfortunately, it seems that many "near upsets" have gone unreported and we have missed heading the problem off and are left dealing with the tragic consequences.

The Ops Team encourages all pilots and clubs to keep reporting incidents, and to pay attention to even minor deviations from normal procedures. You may "get away with" the occasional breach but that is no reason why it should drift into becoming acceptable practice. Take care out there!

Martyn Cook
National Operations Officer
Gliding New Zealand
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An "Eventuality" is an event which could happen very quickly during the launch.

These checks are a way to **preload the required actions into your brain** so that if the event happens you can respond instantly and appropriately. There are many possibilities - those listed below have caused the most serious accidents in the past.

Once you understand each *Eventuality* you only need to recite a few words during your pre-flight preparation to preload your brain. Each one needs just a few seconds.

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Winch Launch "Eventualities"

1. Recite: Wing Drop: Release immediately.

Action: Release before the wing drops onto the ground - if possible. Always check ailerons are neutral and wing is balanced before "all out".

Reason: If the wing on the ground snags on the grass while the winch is accelerating the glider could slew violently. The upper wing could lift up and the glider could roll upside down or cartwheel.

2. Recite: Attitude: A controlled shallow climb until speed reaches . . .

Action: Be ready to control the attitude with elevator throughout the launch. Check for the initial elevator position - does the stick need to be neutral or held well forward on this glider? Never let the nose get too high!

Reason: Although many gliders fly a winch launch without much pilot input, this is not always the case. Some gliders can pitch up rapidly on launch, especially if too much power is applied by the winch. Allowing a transition to full climb before the ASI shows 1.5 times stall speed can result in a wing-drop stall or snap roll.

3. Recite: Speed: Minimum launch speed < 60 knots > best speed < 65 knots >

Action: You must know these speeds for your glider before attempting a launch. Glance at the ASI, check where 60 knots is, wait until reaching this speed (and increasing) before gently transitioning to full climb. If this speed is not achieved then lower the nose, release the cable and land ahead.

Reason: Different gliders have different minimum, optimum and maximum winch launch speeds. You need to have the speeds for the glider you are currently flying at top of mind before launch. In some gliders the allowable speed range is quite narrow.

4. Recite: Overspeed: Max Speed < 81 kts > Gain height before releasing.

Action: If a serious overspeed occurs close to the ground the best course is to continue in a normal climb to a safe height, and then abandon the launch if you cannot get the speed back within limits. Overspeed in the first 1/3 of the launch will not overstress the glider, but releasing at high speed close to the ground has proved hazardous.

Reason: If the glider over-speeds low down then you may have delayed the transition into full climb, or not be climbing steeply enough. Or the winch could be delivering too much power for your glider. Climb to a few hundred feet, release and land ahead - don't release when low and fast!

5. Recite: Break in Cable: Lower the nose - wait - no airbrakes or turns until speed reaches < approach speed > knots - pull release - land straight ahead if possible - if turning then downwind today is < left / right >.

Action: Lower the nose to below the attitude required for Approach Speed. Do not open the airbrakes or start a turn until the ASI reaches this speed. Landing straight ahead is far less risky than turning at low level.

Reason: Pilots associate attitude with airspeed. After a winch launch failure there can be a considerable delay after lowering the nose while the speed builds up to a safe level. Opening the airbrakes will add to this delay and cost more height. Turning without enough speed risks a spin, especially a turn to the downwind side. If you are high enough and decide to do a circuit then making the first turn to the downwind side will bring you back into a headwind component much quicker.

WASOB = Wing drop - Attitude - Speed - Overspeed - Break

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1. **Wing drop** on ground roll - release before the wing touches the ground!
2. **Attitude** - control the glider in a shallow climb until the speed reaches . . .
3. **Speed** - . . . minimum launch speed = < > kts, best climb speed = < > kts
4. **Overspeed** - if airspeed exceeds < > kts in first part of launch gain height, try to get the speed back within limits, else release and land ahead.
5. **Break in Cable** - lower the nose - no turns or airbrakes until reaching < normal approach speed > - pull the release - land straight ahead, or turn downwind, which today would be < left / right >

Aerotow Launch “Eventualities”

1. Recite: **Keep Straight on ground roll - or release.**

Action: Stay directly behind the tug, and level with or below it at all times. If you drift sideways beyond the wingtip of the towplane then release, land ahead and apply wheel brake. If one wing tip drags along the ground and doesn't come up quickly then release and start the launch again.

Reason: Being laterally out of position on the ground roll increases drag and results in slow acceleration. It can also pull the tow plane sideways. Slow acceleration means that you may not clear the upwind boundary at a safe height and speed. If the rope goes slack and then jerks tight when low and out of position the tow plane can become uncontrollable and crash.

2. Recite: **Accelerate to ___ knots by <landmark on ground> - or release!**

Action: Decide in advance a point on the runway ahead at which you must reach a specified speed (eg. 60 knots) during the takeoff roll. If the tug-and-glider combination is not above that speed by that point then release, land ahead and apply airbrake and wheel brake.

Reason: If the combination is not accelerating normally then you might not clear the boundary fence ahead. Don't wait for the towplane to wave you off - abandon the launch and steer to one side to avoid running into the tug. Fly the glider as smoothly as possible during takeoff to minimise drag.

3. Recite: **Signals from Tug: Rudder Waggle = lock air brakes, Rock Wings = release immediately.**

Action: Both signals require immediate action from the glider pilot, so you need to be ready to receive them and know what they mean. You may receive a radio call from the tow pilot if a radio is fitted. If you release at low level beyond the runway then the best action is to land straight ahead in any available space, even if the glider gets damaged. Making a turn back to the airfield at low level can result in a spin - especially at low speed - and a nose-first impact which is usually fatal!

Reason: The tow pilot is very vulnerable if the combination doesn't climb properly. Sometimes the airbrakes on the glider don't open until flying speed is reached (so make sure you do your checks properly). If you don't release when the wings are rocked you could cause the towplane to crash. With a deliberate signal you will see the ailerons move *before* the wings rock - that's how you know it isn't turbulence tossing the towplane around.

4. Recite: **Out of Position beyond the wingtip or above the tug = I must release!**

Action: Any position except directly behind the tow plane can present a hazard to the tow pilot. The lateral limit is the wingtip of the towplane. If you get beyond this - or if the towplane disappears from sight - you must release. If the rope goes slack and looks like it will tighten with a jerk then you must release before it does. Be gentle when "boxing the wake" and only practice this above 1,000 feet AGL.

Reason: If you get out to one side, and the rope becomes slack then suddenly tightens, this can jerk the tug laterally into a spin from which it will need 500 - 700 feet to recover. If you get too high the tail of the tug can be lifted up and the rope tension and extra drag could cause the tug to lose speed and stall. Again, 500 - 700 feet to recover. This is how tow pilots can be killed.

5. Recite: **Break in Rope before <landmark> Wings Level, Speed, Land Ahead**

Action: If the rope breaks or the tug waves you off in the first few hundred feet after takeoff then maintain approach speed and land in the best available space in front of you. Don't try and turn back to the airfield at low level - it's too risky. Think about what you would do on every takeoff.

Reason: An aerotow launch will often mean flying over unlandable terrain at a fairly low height until the glider is high enough (and has enough speed) to turn around and land back on the airfield. Landing straight ahead (or almost straight ahead) usually permits a horizontal landing, which is survivable even if the glider is damaged. Trying to turn at a very low level can result in the wing tip hitting the ground, or a low-level spin. In both cases the glider hits the ground vertically nose-down, and pilot survival is far less likely.

SASOB = Straight - Accelerate - Signals - Out of Position - Break

1. I will keep **Straight** on ground roll - otherwise release and apply wheel brake.
2. **Accelerate** to < > kts by (specify a landmark) - otherwise release, land ahead
3. **Signals from tug**: rudder waggle = lock air brakes, rock wings = I must release!
4. **Out of position** = I must release!
5. **Break** in rope low to the ground - keep wings level - approach speed - land ahead.