

AGC Weekly News

The weekly newsletter of the Auckland Gliding Club at Drury, Auckland

Weekend Roster

Saturday

Tug Pilot:
Instructors: Jonathan Cross, Graham Cochrane
Duty Pilot: Georgia Schofield
Winch Driver: No winching

Sunday

Tug Pilot:
Instructors: Ross Taylor, John Robertson
Duty Pilot: Gerard Robertson
Winch Driver: No winching

Clubhouse Working Bee – Session No 2

James Butterworth

The working bee achieved a few additional clean up jobs with a small but enthusiastic bunch of members. Thanks to everyone who gave their time. Another skip was filled but there are still more items that wouldn't fit. This means another bin is required – may be able to use a 6m³ one for the remainder. Also, a start was made on cleaning out the woodshed and Lance started scraping flaking paint in the men's bathroom. Potholes were filled with gravel then spread by hand and Paul S compacted it by driving over it with the Case tractor. Photo attached of some of the volunteers with another full bin.

Regards,
James 027 294 4030



Lance, Craig and Dusty at the overflowing skip

Weekday Tugging Offer from Ben

Hi All,

My availability will change each week. However, I'm more than happy to be called anytime mid-week and if I'm available (i.e. not working on shift), I'll happily come out to tow, even for 1 or 2 tows.

Many thanks,

Ben (Duthie Jung).

0226178572

In Omarama Now



<https://www.youtube.com/watch?v=WelaTshYk6U>

Drury Competition Pilots in Club Gliders

Russell Thorne

The Drury Competition is to be held at our club from Saturday 1st to Friday 7th January 2023. It is the highlight for the Auckland Gliding Club to start 2023.

Details are here at <https://gliding.net.nz/events/agc-drury-comp-jan-2023>. This is an excellent opportunity to extend your cross country gliding experience.

Now is the time to signal your intention to fly a club glider in the Drury Competition, either in a

club single seater, as an instructor or co-pilot in a two-seater. On request, it is likely that the Duo Discus or PW6 could be available with an instructor in the back seat, which is a great way to start your competition career or simply improve your performance. Club Instructors or co-pilots may also enter on a single day basis.

All bids should be forwarded to me as soon as possible to cfi@glidingauckland.co.nz

SB Airworthiness Certificate issued

Ross Gaddes advises that CAA NZ visited Drury on Wednesday to inspect the PW-5 donated to the club by Paul Schofield, which has undergone various maintenance tasks in Sailplane Services.

As a result, an Airworthiness Certificate has been issued and SB should be available for club use in the near future.

Papakura Museum Gliding Exhibition

Gerard Robertson

The exhibition at the Papakura Museum was launched with a reception on Wednesday afternoon, attended by a good number of club members and others.




Using material largely provided by Russell Thorne, an attractive presentation has been crafted. I did wonder aloud whether it might be possible to fit a PW-5 fuselage into the display area.

I have suggested to the committee that we consider having an open evening (a sausage

sizzle, with gliders on display and club members on hand, plus a demonstration of a winch launch) in late January. The idea is taken from an evening being planned by the Wellington Wairarapa Gliding Club, mentioned during the monthly Zoom meeting of the "Presidents' club". This club is a collaboration with the WWGC president, Simon Casey, and offers the opportunity for sharing of ideas amongst clubs. It's working well so far, having had the third earlier this week.



Weekend Weather

⚠ Severe Weather Watch			
Friday 9 DEC		Scattered showers, clearing late evening but remaining cloudy. Fresh northeasterlies easing in the evening.	▲ 23°C ▼ 17°C
Saturday 10 DEC		Mostly cloudy, the chance of a shower, most likely in the afternoon. Northerlies.	▲ 24°C ▼ 17°C
Sunday 11 DEC		Rain developing in the morning clearing at night. Light winds.	▲ 23°C ▼ 14°C

Saturday brings a rainy day, sometimes heavy in the west.

On Sunday, rain clears south of the Central Plateau and conditions become fine there, however rain persists in the north.

The DG-808-J

Bob Carlton, Desert Aerospace, LLC
Moriarty, NM USA, 505-239-5967
bob@desertaerospace.com



Rumors Been 'Round

No, not the ZZ Top song or the Fleetwood Mac album...Rumors have been around for a few months about a new turbine powered DG808J, modified from a DG808C Competition model.

We're ready to present this beautiful aircraft. (The second one, a DG-808B will be ready in a couple of months.)

A little background

As some of you may know, through my company, Desert Aerospace, LLC, I have been producing and flying turbine powered gliders for almost 20 years.



The most famous of these is my Salto air show glider powered by a PBS TJ-100 turbine which produces 250 pounds of thrust. It was built specifically for air show aerobatics, not soaring. It is a glider like a NASCAR Toyota Corolla is a Corolla. Its engine is not retractable. It has served quite well for 14 years, 317 air show performances (53 of which were at night with pyrotechnics). Our two seat TsT 14 BonusJet has also served well since 2009, providing hundreds of jet glider training sorties and memorable soaring flights. The TJ-100 engine has also served me well in the SubSonex microjet airplane, with 121 air show flights (32 at night). There are about 25 SubSonex airplanes flying and another 30 being built. Most of you are also probably aware of the four Arcus-J gliders we built for Dennis Tito, which allowed him to totally sweep the OLC a few years ago. One Arcus-J has recently been sold to a very competent cross-country pilot. He has already done some impressive flights, using the Arcus-J's high-speed capabilities to get home in high wind and over/around weather. Look for more impressive Arcus-J flights this coming OLC season.

Fighting FAA...and winning

Just in the last couple of weeks, we have finally won our decade-long battle with the FAA. Pilots of turbine powered self-launch gliders no longer require any special authorization (there is still a requirement for pilots of two seat turbine gliders to do a yearly proficiency check if they carry passengers, but we have a solution for that in the works as well.) This was a BIG win against an entrenched FAA with a 1960's mindset about jets.

PBS Turbine engines

The PBS TJ-100 has been our flag engine for years. This is NOT a scaled-up model airplane engine. PBS has been around for over 100 years and produced APUs for the Soviet military. When the Soviet Union collapsed, they looked to the west for new customers. They created the TJ-100 based on the Safire APU, of which they had built thousands. There are now well over 1000 PBS TJ-100 engines in operation around the world.

The problem is the TJ-100 engine is just too big for a single seat racing glider. Their cost has also gone up, making it less attractive for some used glider conversions. The DG-808J uses two PBS TJ40 engines (the TJ-100's little sister). The TJ40 features the same internal starter/generator setup as the TJ-100 and similar engineering. Unlike the TJ-100, it does not have a recirculating oil system, so it uses a mix of 3% turbine oil with jet-A to run the engine and to lubricate the bearings. Like the TJ-100, much of the electronics are mounted on the engine leaving only a small external Engine Control Unit (ECU) to be mounted externally. Engine parameters are displayed on a small display unit that also records engine time, temperatures, error conditions, etc. Throttle control is by means of a small box velcroed to the pilots left thigh. A surprisingly small number of wires are needed to operate the system.

Engine testing

Last year, PBS loaned us a TJ40 engine for testing. We froze it and all components including fuel to -20°F. Even covered in frost, it started numerous times with no problems. We took it to 10,000' MSL, started it and climbed to 13,000', shut down, restarted, climbed... Again, it started every time. I took it to Estrella in Phoenix and performed full throttle aerobatics and climbs continuously for half an hour. It proved to be a solid engine.

The DG808J has two TJ40's mounted side by side when extended. They rotate one above the other to retract. The entire system weighs about 23 pounds. Engine bay doors are closed when the engines are extended. The three tanks hold 19 gallons of fuel in the engine bay (plus the original DG fuel tank located forward of the engine bay). Fuel feeds from the rear tanks first to maintain proper CG, with the DG tank on a separate switch to fine tune CG during flight. Average size pilots can fly with or without wing ballast and stay within the proper CG range. Lighter pilots will need nose ballast if the rear tank(s) are full.

Engine starting

Engine extension and starting is simple. Switch the DOORS switch to OPEN and the PYLON switch to UP. Protections will prevent a collision of pylon and doors if you do this in the wrong order. Once the pylon is extended (engine instruments come alive), switch the DOORS switch to CLOSE. On the throttle box, flip one engine MODE switch to RUN, then slide that engine's throttle from 0 to 100% and back within 5 seconds. The start sequence will begin automatically. Do the same

for the other engine. The starts can be overlapped, or even done at the same time. The engine display will keep you apprised of the start sequence. Once the sequence finishes, control is relinquished to the throttle box.

Flying and performance

Taxiing is easy with the steerable tailwheel, although speed control with the turbines takes a little practice due to the low drag and slight spool up/spool down delay causing it to want to taxi fast. Take off is accomplished by simply pushing the throttles forward to 100%.

Take off acceleration is slightly less than with the prop, but the acceleration never slacks off. There is considerably less pitch/power coupling due to the engines' lower thrust line.

Lift off is normal, but instead of climbing as slow as practical as you would with the piston/prop system, stay in ground effect until 70 – 85 knots is reached before beginning the climb (jets like more speed). The initial climb will be excellent! Our tests have all been done during summer in Moriarty at a field elevation of 6200', giving us density altitudes of 8000' to 10,000'. Even up here, we're seeing over 500'/minute climb at 80 knots indicated. Above 300' AGL, ease the throttles back a bit. Climb rate is still great. Climbing to over 12,000' is easy, as is cruising at 120 knots indicated. (All test flights were with a 220-pound pilot, parachute, full fuel at take off, no water, both 15- and 18-meter wings. In 15-meter configuration, I did loops, rolls and Cuban 8's with the engines running and maintaining altitude or climbing. Landing may be with or without engines. The 19 gallons of fuel should be good for about an hour cruise at 85% throttle. More flight testing needs to be done to firm up the numbers, but suffice to say, it will outperform any other motor glider except maybe one of our Arcus-J's.

In-flight shutdown

Just like the startup, the shutdown procedure is easy. Let the engines idle for a minute or so to equalize internal temperatures, then flip the engine MODE switches to STOP, either at the same time or sequentially. Let the engines cool for a minute or two. The engine off glide is about 40:1, so there is no hurry getting the engines retracted. After cooling, flip the DOORS switch to OPEN and the PYLON switch to DOWN, then DOORS to close. Again, protection circuits prevent crashing the pylon through the doors if the switches aren't sequenced properly. Once topped out in the first thermal, quickly check that you didn't forget to retract the engines after

cooldown. With their low drag, it's easy to forget and leave them out.

The elephant in the room

We had a great speaker at the ICAS air show convention a few years ago. A week prior to the convention, ICAS sent out a survey. Some of the questions were about our best and worst air show experiences, what we think about while preparing for a show, and what the industry could do better. During his presentation, the speaker asked for a show of hands, asking who thought safety was their team's number one priority. Of course, all hands went up. Then he presented the results of the survey. With all of the 'essay' type questions, safety never came up once. It was all about performance, business, schedules, regulations.

We all claim that safety is our number one priority. However, in practice, we will likely choose performance/brand loyalty over safety. Dave Nadler's hour-long presentation on the safety of motor gliders nailed it. The current generation of motor gliders does not have a stellar safety record. What other group of aviators (or any other sport) suggests that a post-flight inspection after every flight is critical to find things that broke? I've seen broken mounting bolts, broken case bolts, stripped drive belts, and numerous other vibration/stress-induced failures. These are way too common.

I will say that early on, I experienced some failures with the TJ-100 engine. These have been fixed, and I can say unequivocally that the PBS powered aircraft I have piloted have been the most reliable aircraft I have ever flown. This can be based on three things. Low vibration, simplicity, and low stress. Turbine engines don't produce significant vibration. Our engine and retract system have hundreds (maybe thousands) fewer parts, and none of our parts are highly stressed due to the low weight and low rotational inertia.

The dual engine configuration allows climbing if one engine should fail, and the low drag of the engines, coupled with a nice high climb speed means you have more options in the unlikely event they both should fail on take off. Additionally, jet fuel is far less likely to catch fire if it leaks.

Summary

Over the last two decades, we have proven that our turbine self-launching gliders utilizing PBS engines have excellent performance a reliability. No other power method provides equivalent climb/cruise performance, safety and reliability.

If you're interested in a turbine conversion for a DG-800 or other motor glider, give us a call or pop us an email.

Links to photos and videos (CTRL + Left Click the paragraph title)

Various photos of the build process. These are some random photos of the first DG808J build process. Note that some of these show interim design steps, not necessarily the finished design. Engine start sequence. This sequence shows the engines being started one at a time. They may be started simultaneously to save time. Note the word FIRE on the engine display while the preheater is warming up. This is normal. The weird noises you hear while engine 2 is spooling are an artifact of the camera audio. The word FAIL on the fuel gauge was because we initially

used the wrong fuel level sender for the instrument. That was rectified.

In-flight retract and extend

This video shot from the top of the vertical fin shows a retract sequence followed by an extend sequence. Note that since this was only about the fourth time I had retracted in flight, I paused between each switch function. Once I was more comfortable with it, the sequence didn't take quite so long. Also, note that the doors open simultaneously, but close sequentially to accommodate the door gap seal.

Acro

Short acro sequence in 15 meter configuration. These maneuvers were ad-libbed. Note that it is easy to overspeed during acro maneuvers. Kids, don't try this at home without proper training.

Article submitted by Gerard Robertson – thank you.

Members' Small Ads



(file photo only)

Libelle for sale: Standard Libelle 201B, ZK-GID, PLUS Drury Hangar. Delightful to fly; very easy to rig. Original gelcoat, Mountain High oxygen system, Nano logger, parachutes, good trailer and tow out gear. All for \$25,000. Contact Brian Ruddell at 86bdr86@gmail.com



PW5 KF for sale. Current Annual until Dec 2022. Ready to fly. Approx 800 hours flying. Radio, altimeter, airspeed indicator, electric and mechanicals varios. Includes open trailer. Also Includes free use of hangar space at Drury until 31 Oct, 2022, if required. **Priced to sell at \$8,000.** Ideal for single ownership or cheap syndicate. Reason for sale is that glider is surplus to requirements. Phone Murray on 0275 875 438



(file photo only)

One share for sale in Grob G109 (ZK-GOC). Touring type motor glider in excellent condition. Upgraded with Limbach L 2400, so has much better take off performance than the standard G109. **Price for share is \$15 000.00.** Contact Russell Jones on 021 180 5544 or email russell.jones@orcon.net.nz

This newsletter was compiled by Peter Wooley wooleypeter@gmail.com

Roster

	Instructor 1	Instructor 2	Tug Pilot	Duty Pilot	Winch Driver
December					
Sat 10	Jonathan Cross	Graham Cochrane		Georgia Schofld	
Sun 11	Ross Taylor	John Robertson		Gerard Robertsn	
Sat 17	Roy Innes	John Bongrain		In Cheol Kim	Keith Annabell
Sun 18	Paul O'Neill-Gregy	Anton Lawrence		Jason Smith	Grahame Player
Sat 24	Russell Thorne	Graham Cochrane		Volunteer	
Sun 25				Volunteer	
Sat 31				Volunteer	
Jan 2023					
Sun 1				Comp	
Sat 7				Comp	
Sun 8				Comp	
Sat 14				Jonathan Ash	
Sun 15				Keith Macy	
Sat 21				Kevin Johnson	
Sun 22				Lance Feldwicke	
Sat 28				Lois Kok	
Sun 29				Matt Findlay	
February					
Sat 4				Matt Kerrigan	
Sun 5				Nathan Montano	
Sat 11				Peter Wooley	
Sun 12				Patrick Lalor	
Sat 18				Peter Himmel	
Sun 19				Tristan Harvey-S	
Sat 25				Wolfgng Schenk	
Sun 26				AJ Dudley	
March					
Sat 4				Allen Pendergrst	
Sun 5				Dylan Watson	
Sat 11				Frank Excell	
Sun 12				Geoff Green	
Sat 18				Geoff Gaddes	
Sun 19				Georgia Schofld	
Sat 25				Gerard Robertsn	
Sun 26				Caleb Rosvall	