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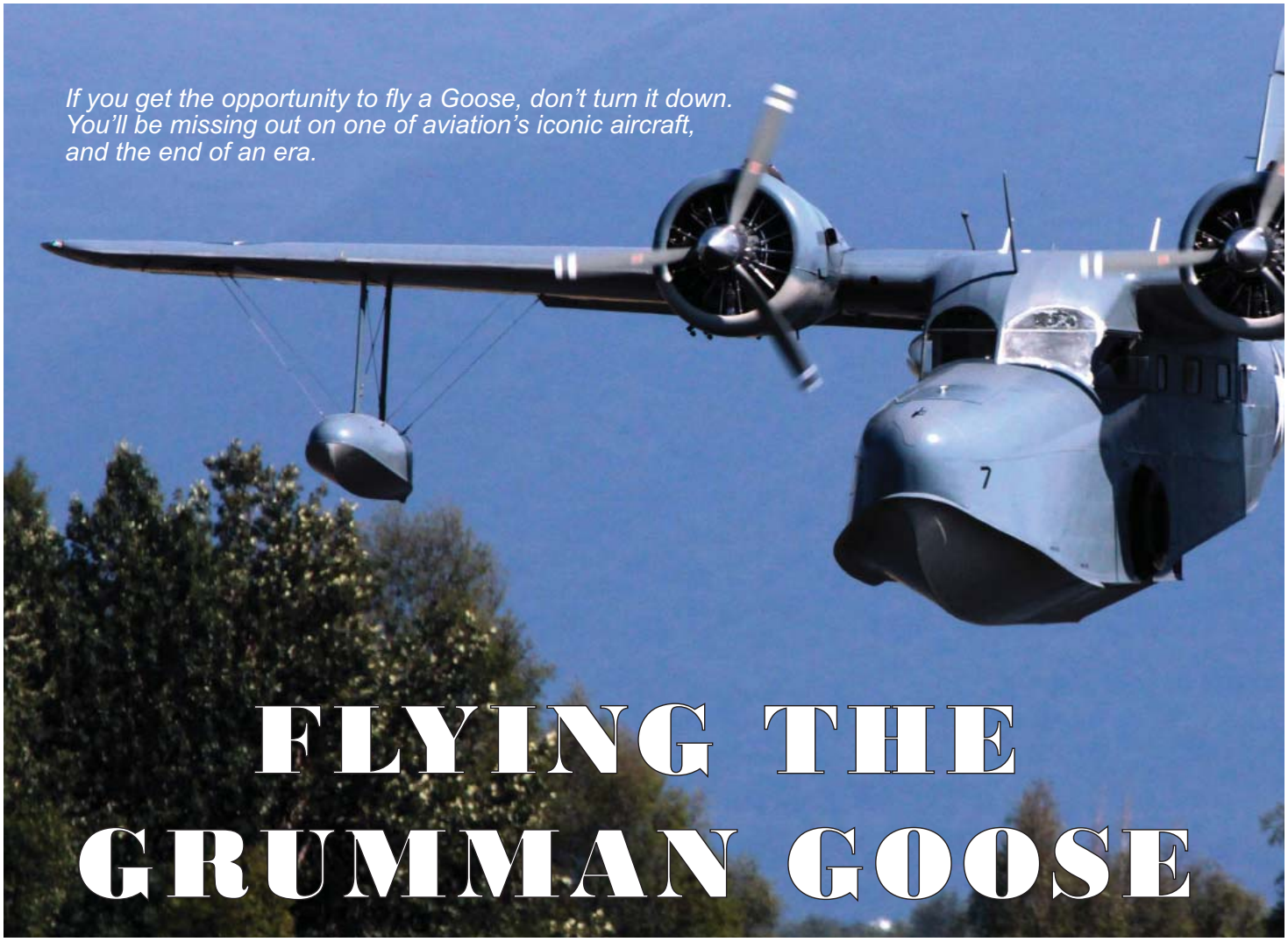

*If you get the opportunity to fly a Goose, don't turn it down. You'll be missing out on one of aviation's iconic aircraft, and the end of an era.*

# FLYING THE GRUMMAN GOOSE

*South African aviation super enthusiast,* **CHRIS R. BURGER,** *has long dreamed of obtaining his flying boat licence. In this article, he invites readers to join him on his visit to the lakes of Alaska where he recently realised this dream.*

**MANY REVIEWS are written by grizzled veterans who have flown dozens of comparable aircraft. This review is not of that ilk. In fact, before this trip I had never flown a flying boat. Therefore, regard this review as an attempt to share the taste of another era.**

The flying boat era came to an end with the invention of large runway-based transports and reliable engines. Once land-based aircraft could fly inter-continental trips without dumping their passengers in the sea occasionally, the writing was on the wall for flying boats. The last Western flying boats were manufactured more than fifty years ago, and most airworthy examples today are more than 70 years old.

For this reason, I have also included some background material that would be old hat to seasoned water flyers. However, with those being few and far between in Africa, most of it should be of interest to readers.

In 2009, while visiting the National Test Pilot School in California, I had the opportunity to fly a Lake Buccaneer, a cross between a Piper Arrow and a rowboat. I was intrigued by the wooden interior and the anchor and the life vests. The water flying required me to use all the tricks I'd learned in two decades of flying, and they worked.

Although there was not enough time to get the Airplane Single-Engine Sea Rating, a new item had definitely been added to my wish list. It took five years, and in 2014 I obtained a Seaplane Rating at Twitchell's in Maine. Again, basic attitude flying skills and a lot of theoretical preparation won the day, and I was able to quickly complete my rating.

The Seaplane Pilots' Association sent me their annual Training Guide and a few complimentary copies of *Water Flying*, their monthly magazine. Due to the protracted postal strike, several issues of the magazine, the annual Training Guide and several marketing letters arrived around the start of this year. I immersed myself in the content.

Water flying definitely opens up options that mere mortals do not enjoy, and there were numerous tales of wild places and outdoor adventures.

One image haunted me. On the cover of the Training Guide was a Grumman Goose, parked on the shores of a crystal-clear lake with a snow-covered mountain towering in the background. Could this be Alaska?

Google unearthed more facts on the aircraft. It was indeed in Alaska, one of those destinations that I've always wanted to see.

The Grumman G-21 Goose was produced from 1937 to 1945. N703 is a 1944 model, with a history in the military and the Coast Guard. It is now owned by John Pletcher, a retired lawyer and

*The veteran Grumman Goose. This particular aircraft is not the actual one in which the author did his conversion, but is remarkably similar, even down to the colouring....*

wheeler-dealer in Anchorage. It is essentially original, with only a few modern radios added.

Negotiations with Burke Mees, the instructor on the aircraft, regular contributor to *Water Flying* and Alaskan Airlines B737 captain, looked promising. However, I would first have to add an Airplane Multi-Engine Sea (AMES) rating to my American ATP. Under American rules, no type-specific training is required for light aircraft once you have the relevant class rating.

There are not many options for AMES training. I could only find a TwinBee (a conversion of the 70-year-old SeaBee) and a Grumman Widgeon in Florida, and a Beech 18 in Arizona. I preferred the Widgeon, as it appeared to offer a natural growth path to the Goose.

Early in 2015 my circumstances changed on several fronts and I started thinking that it was now or never. In May, I started making arrangements for a trip. First get the AMES rating. Then fly the Goose, with a possible side trip into Yukon. Finally, visit Oshkosh to see the mother of all air shows, with side trips into three adjacent states. This trip looked like the aviation outing of a lifetime.

**PREPARATION IN FLORIDA**

My Widgeon training would be with Chester Lawson, the owner of the immaculate Widgeon N86638. Chester is a retired FBO owner from New England who lives in Spruce Creek, near Orlando, Florida.

Spruce Creek is a fly-in community built around an abandoned military runway. Lush vegetation, luxury homes and a good runway conspire to provide a perfect environment for an aviation nut.

Over 400 aircraft are based there, including warbirds, business jets and helicopters. Around 25 000 movements are recorded per year. Most residents will tell you that they expect going to heaven to be a lateral move.

Chester expected that we could complete the training in "two to four days", depending on weather, and on my background.

I then found a helicopter instructor in Spruce Creek. Tony Crawford is a retired veterinary surgeon from New York who owns a Robinson R22 instrument trainer, N7188N. He could help me to get a helicopter rating, also in two to four days. Some training and a two-hour night navigation flight would be required.

The night "nav" could be a challenge, due to the nightly thunderstorms at that time of year. It would be fun to fit everything into the five available days.

On the Widgeon, our training sorties were all similar. We would take off on the runway, then head to some nearby lakes. We would splash around for an hour or two, then change seats for the return journey. Chester didn't want to take any chances with his baby, and there were no brakes on the right pedals. At least I did some of the runway landings from the right seat.

The Widgeon handles very nicely. It is light on the controls, and at the weights we flew at, has plenty of power. It is less inclined than a floatplane to put its nose into the water, so it is perhaps a little more forgiving than the average single.

I found it amusing that alligators were often peering at us on the surface, hastily submerging a few seconds before we got to them.

The training went exactly according to plan. My finances didn't. As is its custom, Standard Bank left me in the lurch by stopping my credit card — despite the fact that I had advised them that I would be out of the country. I had a hard time raising the cash needed for all this flying!

I eventually walked out of there after five days, with the AMES and helicopter ratings in my pocket. The most memorable flight was the night nav in the helicopter. Flying up Florida's east coast from Spruce Creek to St Augustine, at night and in perfect weather, was one of those sights that can drive grown men to poetry.

**FLYING THE GOOSE**

The Goose is based at Lake Hood, the world's biggest seaplane base. Locals claim that a quarter of the world's floatplanes are based there. The lake is situated right next to Anchorage International Airport, and also has an adjacent runway. The surrounding mountains form an impressive backdrop. If you know what to look for, Denali is just visible to the north, 200 km away.

Like the other early Grummans that I've flown, each Goose has its own character. Burke, who has flown more than a dozen of them, including perhaps more than half of the current airworthy examples, says that they all have different systems, equipment and behaviour. They have

*The author at the controls fine-tuning the engines to get them synchonised. Note that the throttles are on the roof panel. Pitch levers can be seen aft of the throttles.*

different auxiliary fuel systems. They have different panel layouts. They have different maximum masses. They leak different amounts, they have different fire suppression systems and they start differently.

N703 was built in 1944 for the US Marine Corps. It later saw service with US Fish and Wildlife. It was restored fully in 1996. Its gunmetal grey paint job is truly immaculate. Even the propellers do not show the spray erosion typical of seaplanes, probably indicating some recent touch-up work.

Everything works, and I could see no evidence of anachronistic modifications, except for some 25 kHz-compliant radios and a GPS. The flight instruments are the original style, including a vertical-spindle DI. And, of course, they are all mounted far from where a modern pilot would look for them.

Even the paint job is authentic. When I asked John the meaning of the "7"on the nose, he replied that he didn't know, but as they found it in a previous layer of paint during restoration, they retained it to preserve the aircraft's authenticity.

We spent about an hour working around the aircraft, with Burke talking and me asking lots of questions. It is a simple, rugged workhorse, with basic systems and solid construction. The main wheels are retracted by a chain drive. N703 has the optional electric motor, used for air retraction only. For all extensions and for water retraction, a manual crank is turned through 40 laborious turns.

An elaborate checklist is provided for the purpose. For land takeoffs, just move several levers into place and throw a switch. Burke cautioned me not to use electric retraction on the water, as debris trapped in the wheels could puncture the fuselage on retraction. I would later witness this effect live.

The whole session, both before and during flight, involved a lot of banter between me, instructor Burke and owner John. They left me to decide whether to emphasise flying or sightseeing on this flight. I elected flying, and we decided to head west to get to the closest useable lake, while still having the opportunity of seeing one of the closest glaciers.

Other options included magnificent mountain lakes northeast and south of Anchorage, but the time involved would eat into water landing opportunities.

There are around a dozen drain plugs below the fuselage (also unique to each specific Goose). These plugs have to be unscrewed to remove water after a flight, and replaced before the next one. Failing to do so could result in unexpected swimming lessons, as the hull will fill up with water after landing.

Burke claims that all Goose pilots have an L-shaped mark on their back trouser pockets, due to the ¼" hex key they all carry. In a simple, but solemn ceremony, he handed me my very own ¼" key. He warned me not to carry it in my hand baggage, as it would probably be confiscated by the TSA.

The nose compartment is roomy, with a maximum capacity of 182 kg. It is accessed through a hatch on the bow *(remember this is a flying boat!).* The only way to get there is by climbing up from the main door in the left rear of the hull, and walking across the cockpit on to the bow.

This arrangement allows ample room to manipulate the centre of gravity. The maximum takeoff mass is officially 3 636 kg, but operators use different masses up to 4 068 kg. The latter figure has been ratified by exemption in Alaska, although no-one seems to be able to find the paperwork from which that figure was derived.

Empty weight of a typical aircraft is around 2 500 kg, resulting in a typical useful load of just over 1 000 kg. Some of the aircraft were re-engineered with turboprop engines, with gross weights of up to 5 700 kg.

Refuelling is also done from above. Two identical openings are clearly labelled "Oil Only" and "Fuel Only". The fuel system is simple, using both tanks together to supply both engines. There are two engine-driven pumps and a manual wobble pump for priming. Linear sight gauges provide a direct indication of fuel quantity.

Oil capacity is eight US gallons. Yes, gallons. Burke reports that intermittent mishaps occur, when fuel is poured into the oil nozzle. Draining and replacing the oil solves the problem, as the residual fuel causes no harm. These engines can be fitted with an oil-dilution system that deliberately injects fuel into the sump for low-temperature operation.

It is possible to walk from the central hull down the wings all the way to the wingtips, if required to get to the dock. Handy, if the main access door happens to be far from the quay. On land or from a boat, access is up a removable ladder attached to the main door.

**START-UP AND TAXIING**

The pair of Pratt and Whitney R-985 Wasp Juniors would be familiar to most South Africans. It is the smaller brother of the ubiquitous R-1340 Wasp used in the Harvard. It is also a nine-cylinder radial, but develops only 340 kW, about three-quarters of its bigger brother. It looks and sounds about the same, though. Most of us would look up immediately, looking for a formation of two Harvards.

The engines are unreachable from the ground, but a plank can be inserted into a purpose-built slot in the cowling to enable a mechanic to stand next to the engine if work is required — either on the ground

or on the water. If the propellers have not been turned through by hand, the start procedure involves watching each one turn through at least nine blades (three full revolutions of the three-bladed prop) before turning on the magnetos.

The engines both have classic four-position magneto switches. However, there is also a master magneto switch, which can be used to kill all four magnetos at once. Its use is to reduce power while taxiing close-in, by pulsing both engines on and off. Even at idle, those radials still propel the hull through the water at a healthy trot. After all, flying boats do not have brakes when on the water! The wheels can be lowered if the water is deep enough, to add drag and improve directional stability.

Park brakes are applied by hooking a pair of nasty-looking hooks on to the rudder pedals, keeping the top part deflected. Stomping on the pedals causes the spring-loaded hooks to jump out of the way.

Taxiing on the ground involves use of differential brakes and thrust, as the castoring tail wheel does not provide any help. It's a cumbersome beast on land, and some planning is required to prevent the inertia causing huge overshoots on the taxi.

**TAKEOFF**

The run-up is conventional. All engine control levers are on the overhead panel, with your hand above eye level when operating the throttles. The engine-driven superchargers produce up to 36,5" Hg of manifold pressure. Takeoff is noisy, but conventional.

We took off on the Lake Hood runway with a quartering right headwind. Full right aileron resulted in a wings-level liftoff. The climb rate was brisk; acceleration less so. Climb is at 90 knots.

Airwork was delightful. The controls are somewhat heavy, but not excessively so for a four-tonne aircraft. Trim is very effective and precise. A turn or two of the crank mounted between the pilot seats results in hands-off flight.

The manually-controlled ailerons are powerful, with considerable adverse yaw. Steep turns and slow flight are relatively effortless, with great pitch and roll stability. The hardest part was for a modern spoiled pilot to deal with the cylindrical DI.

We headed west to Figure Eight Lake and joined a floatplane that was shooting touch-and-goes on the water.

*Frontal view of the Goose. Clearly a boat as well as an aircraft!*

**SPLASHDOWN**

I found landing easier than the other machines I've landed on water. The approach is made at 90 knots, with a descent rate of about 500 fpm. A gentle flare results in a reduced sink rate and a gradual speed decrease. The vibration of splashing in the rear hull gradually gets louder as the hull settles into the water, is quite a thrill.

Most touchdowns were gentle and gradual, not the more "thud" that was more common in my previous seaplane landings. Once the hull has touched down, the throttles are closed and the ship settles into the water.

Once she is settled, it is no longer necessary to hold the stick fully back, as the attitude is neutrally stable even with forward motion. In this sense at least, the Goose is more forgiving than most floatplanes.

A land-based pilot transitioning on to amphibious planes needs a mind shift. I was no exception. For the past 5 000 hours, I've checked on every final approach whether the wheels are down. When under pressure, landplane pilots tend to put the wheels down before landing.

Doing so in seaplanes is not a good idea. Landings on water with the wheels down, even partially, will result in disaster, as the plane will stop very suddenly and probably capsize. If the pilot and passengers are not seriously injured during the landing and they can escape from the capsized hull, maybe they can swim to shore (provided that the alligators remain submerged).

Strangely, landing with the wheels up on land is less catastrophic. Most flying boats can tolerate a few landings on the keel, and the keel is generally replaceable.

In his writings, Burke advocates a different mindset to that of a landplane pilot. He reasons that the default position for the wheels should be up. Only before runway landings should the wheels be selected down.

The approach makes sense, but obviously includes some risk for a pilot alternating between both classes. One approach that works is to retain the routine final-approach check, but to correlate the wheels' position with the surface ahead. If it's water, the wheels must be up. If it's a runway, the wheels must be down.

The flaps use a novel arrangement, at least in my limited experience. They are operated by a two-stage vacuum cylinder. Vacuum is provided by an accumulator of about 50 litres in the nose compartment, which is evacuated by carburettor vacuum. The accumulator provides for approximately two full retraction-extension cycles.

I doubt if this limitation is a big problem, as I cannot see flaps needing to be extended twice in a row at full power! Extension happens to 30° on selection, and to 60° only as the speed decays in the flare. Retraction happens by dynamic pressure on the flaps, as vacuum is released by the selector valve.

**EXHILARATING BEYOND DESCRIPTION**

Our time at Figure Eight Lake was busy. I tried normal landings, glassy-water landings, step taxi, displacement taxi and high-performance techniques for short or obstructed lakes. It was hard work, but exhilarating beyond description.

*Beluga Lake's mirror-like glassy water — the most demanding conditions to land in.*

During takeoff, a high priority is to avoid propeller erosion by spray coming off the bow. During one takeoff that Burke did, I looked sideways and was amazed at the amount of water going through the prop.

The technique Burke advocates, which has proved effective in real-life operations, is to use about 30" MAP to get on to the step and start planing, with the hull level in the water. Only then is power increased to 36,5" and flap added to 30° to accelerate and lift off.

Apparently, the reduced torque during the transition results in a significant reduction in blade erosion.

After about an hour and a half, we took a break. Having fun does not prevent a brain from being fried! We shut down at the upwind end of the lake, with the wheels down. The big boat weather-vaned into wind and just sat there. During lunch, I noticed that plants were rapidly drifting by in the water from astern. It turned out that we were making several knots of speed relative to the water, due to those huge radials facing the wind.

During the lunch break, we drifted almost halfway across the lake. Of course, like with any boat, we had an anchor that we could have used.

The anchor line is rigged flatter than on most boats, due to the heavy wind load. Burke recommended using a tether about 10 times as long as the water depth, rather than the more usual seven.

After lunch, I retracted the wheels; 39 turns. Burke reminded me that exactly 40 turns are required. I turned back 10 turns, allowing the wheels to partially fall back into the water. Sure enough, we found huge clumps of plant material in the wheel wells. Had we used electrical retraction, we could have jammed the wheels in the wells, or even punctured the hull.

Fixing the problem involved hanging out of the pilot windows on both sides and manually extracting the plants. The picture is not flattering, either from inside the cockpit or outside. I wrapped the seat belt around my leg to avoid being dumped into the water head down.

Sure enough, after extracting about a wheelbarrow-load of plant material, the wheels retracted to a full 40 turns. As described before, incomplete retraction could result in a really nasty surprise on landing.

Our mission complete at Figure Eight, we headed further west to the mountains. We crossed some very inhospitable terrain indeed, with dense pine trees and almost no roads in sight. I was told that bears and moose regularly frequent that area, but I didn't see any.

*Taxiing on to shore on an Alaskan lake*

Beluga Lake is at the base of a glacier, and I spent a few minutes flying up and down the glacier, gawking. A side canyon was littered with two-metre ice blocks, stranded when the thawing glacier spilled its contents into the valley below in spring.

The glacier itself is an amazing sight. Looking straight down from about 300 feet, I could see fissures in the ice that appeared to be tens of metres deep. You don't want to negotiate that terrain on foot!

**GLASSY WATER PROBLEMS**

In places, Beluga Lake offered glassy water conditions. Glassy water presents great challenges, as depth perception becomes a real problem. Flaring during the landing is likely to result in a crash, as the aircraft will either run out of airspeed above the surface or just plunge into it.

Either way, it won't end well. The standard way of dealing with glassy water is to set the aircraft up in a very gradual descent, perhaps less than 200 fpm. Touchdown happens when it happens, with no flare. Once the aircraft is firmly on the water, the power can be reduced.

Glassy water can also result in problems on takeoff. Apart from the obvious problem of dangerously settling back into water because of lack of depth perception, there is also a huge performance penalty due to the glassy water.

The hull effectively gets sucked into the water by hydrodynamic effects. Waves on the water would normally allow some air to pass under the fuselage, overriding the suction effect.

There were some high-fidelity reflections of clouds and mountains on Beluga Lake, indicating that landing would be a real challenge. We tried one glassy-water landing, then churned up the water with some step taxi exercises. Step turns can be made relatively small by sinking the inboard float into the water.

Even significant down pressure can be applied, and it almost feels like the ship is turning around the inboard float. Some asymmetric thrust can also be used.

I would probably need a few more hours before I get to the point where I can do this trick comfortably and safely, but it certainly got easier with time.

Alas, all good things must come to an end. We headed back to Anchorage, opting for a landing on Lake Hood rather than the runway. We had to wait for some other traffic landing cross-channel,

something that a relatively large flying boat with a new pilot would not want to do.

We did another takeoff and landing, with a tight pattern to avoid the runway at the main airport. We also had to queue for the only available ramp out of the water. All the waiting was not a waste of time, though. I used the opportunity to hone my handling skills on the water. It worked, as I managed to drive up the ramp uneventfully and park in front of the hangar with a sharp U turn.

Shutdown is conventional. A dead-cut check is easily accomplished with the single master magneto switch.

**POST-FLIGHT CHECK**

Part of the post-flight inspection is to pull the weeds out of the wheel wells. Because we spent so much time gallivanting around Lake Hood with the wheels down, another barrow-load of plants had accumulated there. They were extracted and unceremoniously disposed of.

I did not have the opportunity to land the aircraft on land. That is not what I had come for, and no owner of an irreplaceable warbird would want to tempt fate with my limited tail-wheel experience and no brakes for the instructor. However, its lockable tail-wheel and wide wheelbase should not result in any surprises. Burke tells me that wheel landings work much better than three-pointers.

After the flight, we hangared the aircraft. It is not entirely an effortless exercise, with two and a half tons of hardware to move. However, the castoring tail-wheel facilitates tight turns, and we managed to position it exactly where intended.

On the way back to my accommodation, Burke and I exchanged notes about our training books. Both of us had had books published by ASA, the largest publisher of English-language aviation training material. Interestingly, it turns out that both books started off as self-published training aids which turned out to have wider appeal.

Burke undertook to give me a signed copy of his book and some expired charts of the area. I was specifically interested in the airspace arrangements that allow Lake Hood and the nearby Ted Stevens International to coexist so close together.

Flying the Goose was a very special experience. It was unlike anything I've flown before. It is a solid workhorse, with no vices and no fancy frills. It rewards good basic flying skills, and due to the environment it invites you to operate in, will probably punish bad ones.

*Returning to Lake Hood, the world's busiest seaplane base.*

My few hours of Goose flying are one of the highlights of my 33-year flying career. I can think of only one other flight that probably surpasses it, also in a Grumman, up the Nile valley and across the Mediterranean at night. That flight actually drove me to poetry— literally.

This flight was mostly about the aircraft. The backdrop of snow-covered mountains and deserted tundra didn't hurt, but the aircraft was the main focus. It was my 147th model, but because of the novelty of its systems and the water operations, it required more from me than most.

However, it also gave back more than most.

In flight training, my goal has always been to never teach anything that a pilot will have to unlearn later. Sometimes, creative thinking is required to teach habits in light aircraft that will be equally applicable to anything else the pilot might fly later. I was therefore curious to see how my own skills and procedural framework would stand up to the demands of something so different.

*Part of the post-flight check*

The Goose did exactly what I asked of it. It really rewarded good habits, and quickly pointed out the bad ones with a gentle nudge that didn't end in disaster.

It is the perfect learning platform for a world so different from our own South African flying world.

Burke Meese is an experienced advanced instructor. He got the balance between talking and keeping quiet so I could get my feet wet (only figuratively, of course!) exactly right. And John Pletcher oversaw the restoration of the perfect example of a Goose, and is willing to share it with others.

If you get the opportunity to fly a Goose, don't turn it down. You'll be missing out on one of aviation's iconic aircraft, and the end of an era. You can actually make it happen with an American pilot certificate, some solid flying skills, a few emails and a reliable credit card. If you do, let me know how it goes.

Of course, I'm hoping that someone, somewhere will one day recognise that L-shaped mark on my back pocket, caused by that hex key.

I would really love to be branded as a real Goose pilot. ✈