



Woodstock goes the Distance

Report from Andy Keech on his record-breaking non-stop flight in Little Wing LW5 "Woodstock" on 22nd February 2004

Many thanks to Ron Herron of Little Wing Autogyros, Inc. for sending us this story and photos.

LW5's Long Distance Flight, by Andy Keech

The idea and challenge of making a record-breaking, long distance flight in Woodstock had been one of my dreams from the early days of designing and building her.

I knew we needed a reliable, light, high-altitude engine and a fuselage that was strong and slim in frontal area. Ron (Herron) and I decided to limit the width of Woodstock so as to accommodate my body from shoulder to shoulder, leaving enough room to provide a little comfort during a long distance flight.

I also knew that I would need 8 hours fuel if I was to attempt this flight.

Woodstock's in-cabin fuel tanks held 35 gallons, and that amount was perfect for the transcontinental flights. I calculated that to do this flight, I would need an additional 15 gallon capacity belly tank. Over weeks of part time work and effort, Ron fabricated one, plumbing and installing it, then leaving it standing full of fuel for a month to see if it showed any leaks .

In the meanwhile, Ron had given Woodstock a thorough inspection, and found that she was robust and nothing had shaken or worn loose in the previous transcontinental flights. There was some brinelling of the bearings for the teeter bolt, but these were replaced and the oil and coolant were changed.

One of my major concerns was how to stay warm during this flight, which was to be done in the middle of winter. Woodstock was anything but airtight, and did not have a heating system, and I was planning to fly at altitudes where -17 degrees celcius were common. To tell you how concerned I was about flying cold for 7 or 8 hours, I had bought an array of silk and woollen arctic aviator mittens and gloves (and that was just for my hands) and socks, silk undershirts, wool-lined boots, and an electrically- heated suit! I even had advice from a NASA extreme arctic weather expert!

Ron patiently understood my concern, and came up with an ingenious way to heat the cabin, seal it from the from the rear end of the fuselage, and tightened the gaps at the edges of the window and the door.

Another concern I had was, of course, the weather. Fortunately, there was a national weather station on the field, and the guys there were helpful and accurate in their predictions, so much so that I knew my flight date 4 days in advance of it.

However, I still needed to know whether the new belly tank affected the airflow around the tail, and if there were any C of G changes with the belly tank full. To my

relief, there were no noticeable control changes in either case. However, on the second flight, I also decided to check the effectiveness of the heater in a power climb, and in doing so, at around 7500 ft., I noticed white smoke coming from the front starboard side of the cabin. I quickly throttled back and returned to the airport. Smoke was definitely not a welcome sight!

We found that hot exhaust gases leaking around an exhaust-system slip joint had burned through the aluminium heater ducting, which had then oxidised producing the white smoke. As I had to leave the next morning we didn't have time to repair it, so we simply removed the ducting. However, the plus for the day was an extra flight in Woodstock, so that Zane Anderson's TV Jetranger, complete with a gyro-stabilized camera, could video her for a Channel 7 TV news segment about the gyro and the record attempt. This, with the agreement that it not be aired until the long-distance flight was indeed accomplished.

Woodstock was fuelled, the tanks officially sealed and then "put to bed" alongside three JetRangers for the night.

Early the next morning, we arrived at the airport to find that the top surface of the belly tank had "oil canned" upward pressing against the bottom of the fuselage. This was caused by the head of pressure from the cabin tank above which was plumbed directly to the belly tank. (The top tank had not been previously filled with the new interconnection between the two tanks completed). The space between the tank and the fuselage was about 1/2" and looked peculiar to me. For a while I had doubts that I would be able to fly. To fail at this point would mean that I would have to wait another year to get the same favorable weather conditions.

However, the guys, who knew what they were doing, and jumped in to fix it. They realised that each of the 4 straps had a tensile strength of 5250 lbs (about 10 tons total) and that the belly tank, full of fuel, weighed only 100 lbs. In fact there was no real cause for concern. However, to ease any concerns, they installed two fiberglass straps around the tank and attached them to the fuselage.

Reassured, I suited up, got aboard and started the engine, turned on the flight recorder and departed North Little Rock heading east toward Memphis. The mighty Mississippi soon came into view, and crossing it is always a milestone, whether coming or going. Then, shortly there was the Tennessee River. I could imagine Nashville 70 miles off to the northeast, and as I crossed the Cumberland Plateau, Chattanooga was on the right, and Knoxville on the left in the distance. We then crossed the lowlands at the southern end of the Shennandoah Valley, before passing into the great



Smokey Mountains, and finally, the expanse of the almost pristine Appalachian mountains.

While being able to fleetingly appreciate the passing scenery, I was busy with time and distance calculations, navigation, and fuel management.



Woodstock's extra 15 gallon belly tank

However, it became obvious quite early that I had ample fuel for the flight. So I was able to relax.

Woodstock made exceptional time, and I spent the last hour regretting that I had not aimed at setting a longer distance for her to cover. The official requirement is that, before leaving, you state the distance to be flown as well as naming the destination airport. Little did I know that I would land with 2 hours of fuel remaining. Enough for more than another 200 nautical miles.

A bird in the hand.... is good enough.

Andy Keech.

