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APRIL 2010

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KEN SUTTON'S "2010" 310G

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ON THE COVER

THE EVOLUTION OF MY 310

By Ken Sutton, TTCF Member

After owning a late model V35 Bonanza for four years, the announcement of our third child brought with it the realization that our family airplane would no longer serve our growing needs. With three years of flying the Airbus A320 remaining before I moved forward from my airline career, I had plenty of time to search for what I hoped would be the last airplane I'd ever purchase. This meant that replacement candidates would have to be large enough to support my growing family, while not too large to justify once the kids were grown and moved on with their lives. We were accustomed to the speed and range of the Bonanza, and we made frequent trips to Florida; so speed across long distances was a priority. My Bonanza had been a later production model which I came to learn meant that it was heavier and slower than earlier production models. Keen on not making that mistake again, I focused on earlier, but not first production models of potential candidates. My home airport is Lake in the Hills, IL (3CK), which is about 30 miles northwest of Chicago. Lake Michigan was always a formidable barrier when flying my family to or from the east in the Bonanza, so I focused exclusively on the light twin market. The airlines had carried us to destinations "on-the-beaten-path". This airplane would be our source of transport to those places we couldn't get to on the airlines. My wife and I set a goal to travel with the children to all 50-states before they graduated from high school. This airplane would help facilitate that goal. Early in my aviation career, I flew a for a Part 135 freight company that owned a fleet of Twin Cessnas. The cabin cross section is much larger than the Bonanza/Baron and they were like trucks when it came to payload. These airplanes were reliable and above all, fast!

In early 2003, I came across N30T, a 1962 C310-G with a mere 2,700 hours on the airframe. The owner had just purchased a 421 and was anxious to offset the cost of his new airplane. The engines had recently been overhauled by Western Skyways and appeared in excellent condition, and the exterior was in great shape as it had been repainted by Cimarron in 2000. A close look beneath inspection panels revealed an airplane that had been well-preserved. There had been only three owners in the previous 40+ years since Cessna rolled it out of the factory: One corporation, one partnership, and one individual. By all appearances, they had taken very good care of the airplane. The only concern was the 1960's

vintage instrument panel. However, I believed this to be an advantage as it would provide me with the opportunity to upgrade the avionics and create the panel layout I desired. Satisfied after a weeklong pre-buy inspection at a nearby Cessna Service Center, I was able to quickly reach a mutually agreeable price with the motivated seller.

After bringing the airplane back to Lake in the Hills, I enlisted my longtime Bonanza mechanic, Jim Finefield, owner of Finefield Aviation to inspect and provide better insight into my purchase. He maintains several Twin Cessnas for customers throughout the Midwest, so he was very familiar with the potential areas of concern in these airplanes. Step one was removal of the exhaust augmenters to inspect for wing corrosion. Fortunately, Jim found the area around the augmenters, inside the wing, and beneath the flaps to be corrosion-free. I was disappointed that the Cessna Service Center had failed to take this critical step in evaluating the airplane during the pre-buy inspection. Dodging that bullet, I was determined to learn more about my 310. The internet was a valuable resource that led me to The Twin Cessna Flyer. Within two months of purchasing the airplane, I was sitting in Defiance, OH, listening to Tony Saxton's systems lecture at the TTCF Maintenance Seminar. The timing could not have been more fortunate as I learned more about my airplane in an extended weekend than I could have learned in a decade of airplane ownership. From that seminar, I came away with a long list of structural and systems upgrades that would become my focus for the next few years.

After returning from the seminar, I sat down with Jim Finefield and we went over my notes. The first priority was to reroute the exhaust from through the augmenters in the wing, to below the wing as Cessna had modified in later models. Larry Ball at TTCF facilitated the reconstruction of my exhaust system as per the so-called Underwing Exhaust STC, and the staff at Finefield Aviation crafted the required openings in the cowlings. Over the next few years, a lengthy list of refurbishments and major improvements were accomplished at the hands of the great staff at Finefield Aviation. The list is far too long to fully describe here. But some of the more interesting things we accomplished were: An extension of the lower cabin area to the back of the hat shelf, similar to the later H-model design which significantly increased the baggage area; the conversion from generators to alternators; the addition of vortex generators; the replacement of the AD-plagued 2-blade Hartzell props with state of the art three-blade scimitar composite MT-propellers; and a complete restoration of the interior, including a new instrument panel.

The instrument panel and avionics upgrades fell much lower on our priority list compared to the airplane's mechanical systems. But when the mechanical refurbishment was near completion, I engaged Mike Voltl, owner of Mobile Avionics (3CK) to perform the avionics restoration in conjunction with the instrument panel replacement Jim Finefield was completing. In earlier 310 models, the instrument panel is a structural component of the airplane. In addition, the control wheel is connected to a Y-shaped

control column behind the panel. This control column limits the available depth behind the panel. These two significant constraints made the design of a new panel layout far more complex than simply deciding where I wanted instruments and radios to reside. The panel would have to retain its original shape in order to maintain the structural framework. At the same time, we needed to focus on the depth of radios and instruments so as to not conflict with the control column behind the panel. Underestimating the scope of an instrument panel replacement is easy to do if you've never been through it. Fortunately, I had a great team and they performed an extraordinary job of bringing my panel into the 21st Century! With the old panel removed, all the old wiring, hoses, circuit breakers, and switches were replaced with new. In what will soon be a 50 year old airplane, I view this part of the restoration as one of the most critical, particularly in view of the recent NASCAR 310 tragedy.

We were ultimately able to create a panel layout that is similar to what I was familiar with at the airline. Engine instruments were replaced with Electronics International (EI) electronic gauges and stacked in vertical columns just to the right of the primary flight instruments. EI engine monitors were added to provide the information necessary to properly operate the IO-470 engines lean of peak with the GAMI fuel injectors we had installed. The tachometers were replaced with Horizon Instruments' P1000 digital tachs which make manual prop synching simple and quick, and the fuel flow gauge was replaced by a Shadin fuel flow computer. For the GPS navigator, I elected to go with UPS Technologies' CNX80 (later converted to Garmin's GNS480). At the time, this unit was the first and only navigator to receive WAAS approval from the FAA. Unfortunately, 3CK does not enjoy a precision approach, so the CNX80's ability to allow me to fly VNAV and LPV approaches was most attractive. In addition, the CNX80 possessed FMS-like qualities similar to the FMS and FMGS systems I was familiar with

at the airline. The airplane's Century II autopilot suffered from a lack of a pitch mode. So along with the instrument panel and avionics upgrades we began a torturous process of autopilot replacement. The autopilot industry was in a state of turmoil at the time and I walked right into a swirling vortex of entropy. This unfortunate timing led to the installation of three different autopilots from three different manufacturers over a four year period before reaching a satisfactory outcome. As technology evolved, we continued to upgrade avionics components and instruments to what the panel has become today. Along the way there were several iterations and challenges. For instance, we started with vacuum-driven primary mechanical gyros that never worked well in the 8-degree tilt Cessna engineered into the panel. Ultimately, all the primary mechanical gyros were replaced by Aspen's new Evolution EFD1000 Pro PFD. Most recently, Aspen gained approval of their EFD1000 MFD which completed the glass cockpit retrofit. The glareshield was replaced with a Vintage Plane Plastics unit which really helped provide a finished look to the panel. As a final touch, the staff at Finefield Aviation secured the necessary field approval to convert the control yokes to more attractive late-model C310-R yokes. The Aspen system has proven to integrate very well with the GNS480. After experiencing a primary vacuum-mechanical attitude gyro tumble over South Georgia at night in actual IFR conditions a few years ago, I am very happy to have the full redundancy of the two Aspen displays. With XM Weather, TIS-traffic from the remote mounted Garmin GTX33 transponder, and soon-to-be available approach charts, the MFD is a very welcome addition compared to early portable EFB solutions. The Aspen GPSS roll steering unit commands very smooth autopilot inputs into the S-Tec 60-2 autopilot, generated by the GNS480's flight path. A Garmin 695 provides yet a final level of redundancy in this new glass cockpit arrangement. I now have a system that performs in many ways better than the glass cockpit and autoflight system I enjoyed flying with in the A320. Customer support at Aspen is nothing short of exceptional, and reliability has been excellent with all of these systems.

What I have been able to achieve with the exceptional skill of the staff at Finefield Aviation and Mobile Avionics, along with the support, insight, and encouragement from Tony Saxton & TTCF, is exactly what I set out to create in 2003. Namely, I have a seemingly modern, lightweight airplane with multiple redundant systems that provides a high level of safety, while at the same time provides a comfortable and fast means of transportation to help me share my love of travel with my family.

While some may argue I have more invested in N30T than the airplane is worth, I find that to be a very personal calculation. My objective when I began my search was to find my last airplane. While everyone has different tastes and styles, utilizing the latest technology available, I created my vision of what this airplane could become. I have no intention of ever selling it, which makes this something extraordinary I have done for myself, and for my family.

At this point, I have no plans for further upgrades. I'll continue to maintain, fly, and enjoy the places this great airplane takes us. However, as technology advances, it's a good bet that I'll continue the upgrades to keep our 310 as safe, reliable, and enjoyable to fly as possible.