LAKE RIDGE

PROP WASH

A MILE OF HIGHWAY WILL TAKE YOU A MILE,
A MILE OF RUNWAY WILL TAKE YOU ANYWHERE

March 2024

Chapter NOTAM

EAA Chapter 879
Let's enhance chapter participation! We encourage all members to attend meetings and actively invite guests to join us. By doing so, we can create a more engaged community and achieve our goals with greater success.

Notes from the President

We are getting close to placing another order for name tags. If you are interested in ordering your EAA Chapter 879 name tag, please see Bear or Carl. The price of a name tags is $8.49. Donate the difference to the chapter by rounding up to $10.00.

In this issue:	Next Meeting Agenda
➔ Tigressa Tales: An alternative history of GPS and Nexrad ➔ Pop Quiz ➔ A Flight Simmer's Journey to Chapter EAA 879 ➔ Lake Ridge EAA Classifieds ➔ Mark Your Calendar	➔ 10:00: Chapter Magazine Video ➔ 10:15: Opening Remarks / Welcome ➔ Presentation by AME Satish Subramaniam, MD, MPH regarding 3rd Class Medicals with Q & A ➔ Video Selections – TBA ➔ 11:00: Young Eagle Flights / Fellowship

TIGRESSA TALES: An alternative history of GPS and Nexrad in the Cockpit

By: Bill Watson

We've all become children of the magenta line, and anyone who does any serious cross-country travel has Nexrad imagery in the cockpit. While GPS was introduced to the public in 1983, handheld GPS navigators didn't appear in cockpits until the 1990s. While graphical aviation weather and Nexrad imagery were available in the late 90s on the ground-bound Web, inflight access to these services first became widely available with the availability of the Garmin 396 handheld in 2005. However, the very first appearances of panel mount GPS units and Nexrad imagery in aircraft came a bit earlier in unexpected places and on equipment few pilots today have ever heard of. This issue of Tigressa Tales will cover two stories about how I, the pilot and builder of the RV-10 called Tigressa, was first exposed to these game-changing technologies.

Before becoming an airplane driver, I was a glider pilot. Most of my first 15 years in aviation were spent not just gliding or soaring but racing high-performance sailplanes. These sailplanes were enormously capable aircraft with 50' wingspans, composite construction, 40:1 glide ratios, and were optimized for cross-country racing. A typical East Coast race might consist of 50 sailplanes launching to 2,000', climbing up to cloud bases at 6,000', and then flying a triangular course of 150 – 200 miles at speeds of 50 – 70 mph. Much of the time on-course was spent circling at 0 mph and much of the straight-line flight was spent left and right of the course, chasing updrafts or thermals. A speed of 60 mph around a triangular course was challenging. Altitudes constantly vary from a comfortable 5,000' down to a very uncomfortable 500'. Though no fuel was carried, hundreds of pounds of water ballast would be carried in order to fly faster between thermals. Some racing flights involved surfing the Appalachian ridges in a fully ballasted sailplane flown at redline speeds, at treetop heights, for hundreds of miles. West Coast races were often flown up to 18,000' with higher speeds and longer distances. Of course, when things didn't work as hoped, sailplanes would often land in farmer's fields or worse. We'd disassemble the aircraft and humbly return to the starting point by trailer. It was very exciting and rewarding flying, even when things didn't go as hoped!

One of the challenges that we took for granted was navigation around these race courses. The navigation was pure pilotage using sectional charts and eyeballs. During one of my first week-long races near Gettysburg, PA, I didn't just get lost; I got VERY lost, as in 180 degrees lost! At the next

day's pilot meeting, some US Navy officers responsible for security at Camp David joined the briefing to warn us about flying through the P-40 prohibited area. They told us that a glider had been spotted overhead the day before! The contest director explained that it was probably not a racer since the racing task had been in the opposite direction. Yes, I thought, 'the opposite direction' as I slinked out of the briefing… Anyway, sailplane racing rules prohibited the use of any navigation aids such as VOR or ADF receivers. More specifically, the rules prohibited any use of any "ground-based navigation aids." When GPS was released to the public in 1983, the sailplane racing community perked up; GPS used satellites and was not a ground-based navigation system! By 1985, before any rules committee could catch up, the loophole was filled by purpose-built, panel-mounted GPS navigators designed specifically for glider racing. It was a game-changer in the sport. Prior to GPS, would we pull up into a gaggle of sailplanes, flying wing tip to wing tip, and suddenly notice the pilot next to you couldn't see a thing because his tiny cockpit was filled with sectionals. Racers now knew exactly where they were, where the next turnpoint was, and how high and how fast they should fly so they could cross the finish line 5' off the deck at redline.

It wasn't until the early 90s that power pilots started carrying the first portable GPS units in the cockpit, starting with the Magellan GPS NAV1000. The first panel-mounted certified GPS was the Garmin 155, released in 1994. When I switched over from glider racing to plane driving in the early 90s, navigation seemed a bit retro. I acquired a slightly used 1995 Maule that came with a portable GPS unit poorly mounted on the panel. I soon upgraded the panel to include a Garmin 155 for basic navigation and non-precision approaches. GPS and magenta line flying was finally catching on in the airplane world!

The next big thing in the cockpit, especially at the lower end of general aviation, was in-cockpit weather and Nexrad imagery. Radar was too heavy and expensive for most light planes, but dodging storms was the key to traveling places, especially in the southeast US during the spring and summer months. Sferics (a radio atmospheric signal) as implemented in the Stormscope product was the best most of us could do until the Garmin 396 portable was released in 2005. The 396, combined with a subscription to XM Radio, provided inflight access to aviation weather reports and, most notably, Nexrad imagery, the next best thing to onboard radar.

However, a few pilots had this capability starting in 2000 with a magical little mashup called Cheap Bastard Aviation or CBAV. Cheap Bastard mashed together the functions of the Palm Pilot VIIx, which was the latest in a line of personal digital assistants or PDAs, with a communication service called Palm.net that allowed limited wireless connectivity to the Web. The key was that the wireless capability was not provided by a cellular service but rather through a radio frequency network used primarily by truckers. As we all know, cellular service in the air is limited, at best, and generally not supported. The

trucker network utilized a series of broadcast stations that could not only be accessed in the air but, in fact, performed best at high altitudes above the ground.

The cheap part of Cheap Bastard was that for the price of Palm Pilot and a $15 monthly subscription to Palm.net, pilot could get aviation weather reports along with B&W Nexrad imagery while in flight. It did not use GPS for location but required the pilot to enter a VOR station identifier. In return, a low-resolution Nexrad image was displayed for the area around that VOR. The image was generally less than 30 minutes old. All of this for a fraction of what the Garmin 396 and XM Radio would cost five years later. This low-cost mashup was a real game changer for us small airplane pilots.

My wife and I were making frequent trips to Florida between 2000 and 2005, giving Cheap Bastard regular workouts dodging storms. With the 180HP Maule, we were generally flying between 6,000 and 9,000 feet, which was usually above the cloud base but right where the heart of most storms lived. We flew IFR but didn't penetrate the buildups. Instead, we requested frequent deviations to dodge the clouds as we made our way through the usual afternoon convection. ATC understands this type of flying and freely allows the deviations as requested.

On one memorable trip we were approaching the north border of Florida, an area where storms seem to form every summer afternoon, under the control of the great folks at JAX center, and faced with a west-to-east line of moderate storm cells. Flying at 7,000' and 117 knots, we began to request deviations left and right to circumvent the buildups and to remain in visual conditions. Faced with a large mass on our course line, JAX offered deviations left or right with descriptions of the likely deviations required afterward. After raising the little plastic antenna on my Palm Pilot and examining the Nexrad imagery for CRG, GNV, and OCF, I told the controller that I would deviate around the right side of the mass in front of us, then a quick deviation left and right around the next buildup would get us over Gainesville (GNV) with clear sailing to Tampa.

"How can you see that? What do you have there, onboard radar or something?" exclaimed the controller.

While my original request, if made in 2024, would have seemed quite normal with today's equipment, in 2003, it must have seemed ludicrous. Having departed hours ago in a slow-moving Maule, it was

impossible to have any sense of cell locations beyond what the eye could see… except I had Cheap Bastard on board and could magically see around corners and far downrange. I didn't know how to answer his surprised response and just said, "something like that" as he cleared me for the deviations as requested.

(click here to see the mashup in action in the Maule)

Some of you reading this weren't yet flying in the 80s, 90s, and 2000s, and some were not even born, but now you know that glider racing pilots pioneered the development of panel-mounted GPS navigation equipment because of a loophole in their competition rules. You also know that five years before Nexrad imagery was available on the three thousand dollar ($3,000) Garmin portables with XM Radio subscriptions, a few low and slow pilots were using Palm Pilots and Cheap Bastard software to see around corners and dodge thunder bumpers!

Having been exposed to these earlier implementations long before RV-10 kits had been announced, I made sure that when Tigressa first flew in 2011, it was equipped with the latest avionic functions, including synthetic vision, GPS WAAS navigation, traffic, weather, and Nexrad imagery. Few airliners were comparably equipped in 2011.

Since then, regardless of what one may be flying, all these same functions are available on an iPad running Foreflight. Therefore, Tigressa has a well-mounted iPad as both a backup and an easy-to-use planning tool while airborne.

Bill Watson is a member of EAA Chapter 879, the author of the *Tigressa Tales* series and a monthly contributor to the Prop Wash.
Other *Tigressa Tales* stories are available in prior editions of our newsletters.

POP QUIZ

As air temperature increases, density altitude will

a) *decrease*
b) *increase*
c) *remain the same*

If recency of experience requirements for night flight are not met and official sunset is 1830, the latest time passengers may be carried is

a) *1829*
b) *1859*
c) *1929*

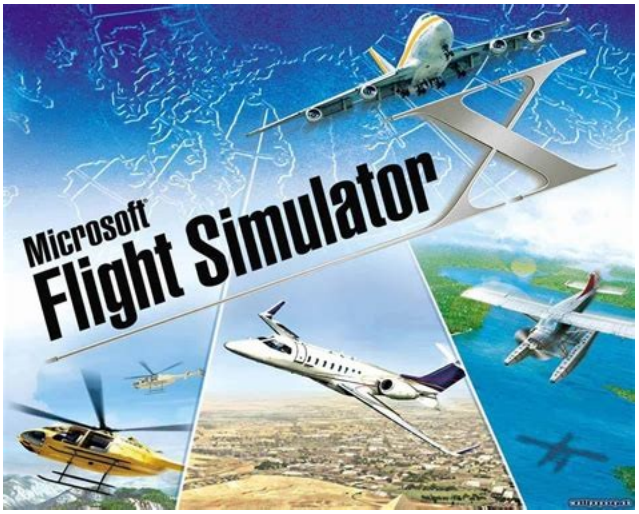
A Third-Class Medical Certificate is issued to a 36-year-old pilot on August 10 this year. The exercise the priviledges of a Private Pilot Certificate the medical certificate will be valid until midnight on

a) *August 10, 3 years later*
b) *August 31, 5 years later*
c) *August 31, 3 years later*

Answers on page 10

WHAT CAN CHAPTER 879 DO FOR ME?

BY: Frank White



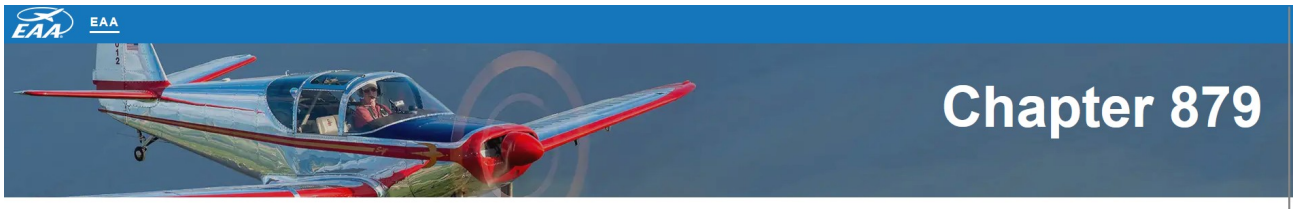
I'm a flight simmer who is deeply involved in my local EAA chapter, EAA Chapter 879. I sought a private pilot license around 2005 or 2006 but never finished training. Back then, it was Microsoft Flight Simulator X that piqued my interest in real-world flying and prompted me to seek a private pilot license. After about 13 or 14 hours of dual instruction, I quit. Quitting wasn't intentional. I was on the pay-as-you-go plan. My plan was to take 2 to 4 hours of dual instructions @ about $125/hour until I soloed, after which my cost would decrease for the most part. At the time, I owned and operated a computer store and computer repair shop. Time was limited. I recall putting off a scheduled lesson, and the following week, I put the lesson off again. Unfortunately, I never resumed my dual instruction. The funny thing was I enjoyed my lessons. They were the highlight of my days. Empire Aviation Flight School, operated by Paul Hesse, who is currently teaching out of the Oxford-Henderson Airport, KHND, began teaching me to fly at Lake Ridge Aero Park. I still remember trying to get the site picture and the hang of landing the Cessna 152, N144L on runway 32. Coming in over the trees was thrilling and I was sure I'd be able to nail the approach and landing the next time. Seems odd to have more experience landing on a grassy 3200-feet runway rather than a paved runway almost twice as long.

Cockpit view of X-Plane 11 Skyhawk 172

Fast-forward to 2017. By now, I had closed the store and had become a gig worker, so to speak. I operated three businesses: Frank White Photography, Home Pro Repairs, and White Cap Solutions. Home Pro Repairs was by far the most time-demanding of the three. The photography business compelled me to build a high-

end, powerful computer for processing photos and video. So, with all that computing power, I downloaded and installed X-Plane 11. X-Plane 11 is the flight simulation program I demonstrated at one of EAA Chapter 879 earlier meetings; therefore, it may be familiar to you. I was hooked instantly on flight simming again. I decided I would resume my flying lessons so I restricted my simming to flying only the Cessna 172. My plan was to get reacquainted with learning: slow flight, stalls, turns, pattern work, radio phraseology, and so on.

For reasons I hold personal and close to the chest, I've reconsidered if getting a private pilot license is the best thing for me. However, I love aviation. I long to fly real-world, if not PIC, then a passenger. I longed to be a part of the aviation community. My participation in EAA, and specifically Chapter 879 is my real-world link to the aviation community. It's something I hold dear to my heart. My love of aviation is why I ask myself, *what can I do for Chapter 879* rather than what can Chapter 879 do for me.



Time marches on and I'm getting no younger, I still hold on to the possibility of getting my private one day. I'd love to get a "hundred-dollar-hamburger." Nevertheless, I'm enjoying the journey, 'cause the destination ain't moving.'

Frank White is the News Editor for EAA Chapter 879
and a regurlar contributor to the Prop Wash

LAKE RIDGE EAA CLASSIFIEDS

Buy/Sell/Trade/Lend/Giveaway | Send your items/service announcement to classifieds@eaa879.com

CONTRIBUTE TO THIS NEWSLETTER

No one can make every meeting. That is one of the reasons why our chapter newsletter is essential. It also provides an opportunity to engage members and non-members about stories we find entertaining or informative. It is said, "Pictures are worth a thousand words". Share the story behind that great picture on your phone or in your photo gallery.

Send your announcements and/or, story & picture(s) to newseditor@eaa879.org for inclusion in an upcoming Chapter 879 newsletter.

MARK YOUR CALENDAR

Submit events to newseditor@eaa879.org or frank@ewhitecap.com

- EAA 1114 Young Eagles Rally, April 27th, Raleigh Executive Jetport (KTTA)
- EAA 1114 Young Eagles Rally, June 1st, Triiangle North Executive Airport (KLHZ)
- 2024 Thunder Over Michigan Air Show, July 20th and July 21st, Willow Run Airport, Ypsilanti MI. More info

POP QUIZ Answers

As air temperature increases, density altitude will

b) increase

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a) 1829

A Third-Class Medical Certificate is issued to a 36-year-old pilot on August 10 this year. The exercise the priviledges of a Private Pilot Certificate the medical certificate will be valid until midnight on

b) August 31, 5 years later

Ref.: Private Pilot FAA Prep Test, 2022 Ed,

ABOUT EAA CHAPTER 879

EAA Chapter 879 organizes regular monthly meetings, breakfast and lunch events, and other aviation-related activities as opportunities arise. Chapter also provides support and resources to local pilots, offering workshops and training programs to enhance their skills and knowledge. Finally, the chapter provides a platform for anyone interested in aviation, including non-pilots, to connect with a vibrant aviation community, in and around Durham, NC.

EAA 879	**Meetings:** Every 2nd Saturday 10:00 AM

Location:	**Chapter Officers:**
Lake Ridge Aero Park - FBO Bldg **4340 E. Geer Street** **Durham, NC 27704**	Ben Plowman, President President@eaa879.org Carl Jenson – Treasurer cvj77@bellsouth.net Randy Smith – Technical Counselor randyjudy@mindspring.com Sam "Spud" Pattellos, and Stephen West – YE Coordinators youngeaglecoordinator@eaa879.org Frank White – Newsletter Editor newslettereditor@eaa879.org

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