The Flying Wire

March 2025

Volume 64 Issue 3

Chapter 124 Experimental Aircraft Association

Next Chapter Meeting: Wednesday, March 5

Dinner – 6:15 pm $10

General Meeting – 7:00 pm

Contents

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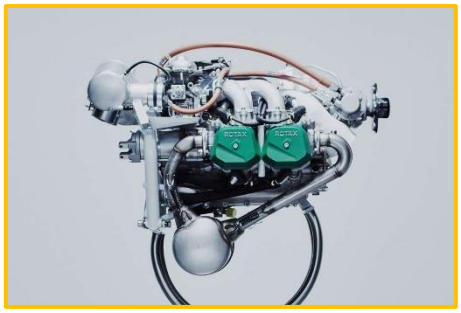
Program: March 5 Meeting

SPEAKER: Board Member John Swanstrom

Rotax!



These powerplants propel much of the 'experimental' fleet we aviators fly, and a myriad of other vehicles worldwide - but what are they?

Please join us for an evening of all things Rotax.

Our resident Rotax expert, EAA 124 Board Member **John Swanstrom** has just returned from his factory Rotax powerplant training and he's primed to spill the beans on Rotax. What are they? How do they work? Where did they come from? What makes them different? And why do so many aircraft builders choose them as the heart of their propulsion systems?

John is a longtime EAA 124 Chapter member, attending his first meeting here in 1985! He's a private and instrument rated pilot who began flying over 25 years ago. He built his first RV-9a in 2010 and has since build an RV-12is and worked on many other aircraft builds here in Sonoma County.

John credits our Chapter and members for inspiring and mentoring him on his aeronautical journey and is excited to share some of his hard-won knowledge with us.

As an added bonus, John has some updates about a young member who passed through our halls and has since gone on to exciting endeavors. **Arnaud Lemans** from France spent time with us here at the Chapter in 2016 & 2017, attending all of our meetings and flying with many of our members. Apparently, we made an impression on him!! John spent time with Arnaud recently in France and is excited to share an update on how we helped shape this young man's journey and where his dreams have taken him!

EAA 124… inspiring aviators and making lifelong friends! We'll see you at the meeting!

Dinner Menu:

Traditional Corned Beef and Cabbage (lots of mustard!), Veggie Variety (potatoes, cabbage, carrots, parsnips, rutabaga), Rye bread and butter, and Homemade Carrot Cake for dessert. **Unbeatable value at only $10!!**

News and Updates

February Chapter Meeting sees record attendance!

There are good things going on over at EAA 124 these days. If you've come to any of the meetings over the last year or so, you may have noticed that things are changing over here on the west side of the field. Chapter 124's been growing! Attendance and membership is up and many new programs are being added. Young and old have been comin' in and the energy over here's feeling really good these days!

February's Chapter meeting was an exceptional night when more than 70 people braved a cold winter evening to see what was happening. They were in for a treat!

Our regular chef **Sam Werback** and her amazing sous chef **Andy** took a well-deserved evening off and came down to just enjoy the night. Sam and Andy are stalwarts of the EAA and the pillars of our Young Eagles program. They are also the backbone of our cooking team, making the amazing dinners that we serve every month at our Chapter meetings. In fact, you could call Sam and Andy the heart of EAA 124, and we are so grateful to them for being such a consistent force of energy and contribution. With that said, it was nice to see them take a night off for once and have the space to just visit with friends.

In their absence, Chapter members **Bill and Linda Conklin** and Board member **Marlon Young** stepped up to the plate – and boy, did they knock it out of the park! Bill and Linda brought a huge pan of homemade Paella - a work of art and truly exceptional! Meanwhile Marlon, not to be outdone, produced his famous (and delicious) Risotto! Bread, Caesar salad and chocolate sheet cake were on the menu to top off the night. Everyone ate to their heart's content and there was food still left over. If the lawyer-ing game doesn't work out for Marlon, or Bill finds he's not so enamored with dental work anymore, we think they both have big futures in the culinary arts!

After dinner, our speaker for the evening was **Jordan Haines** from Oakland ARTCC. His topic: the National Airspace System, ATC, and what it's like to be a controller in our region. As a surprise, Jordan brought along his friend **Nick Navarro**, a Santa Rosa native and NorCal ATC Controller. Both guys were great and together gave a truly engaging presentation. With professional slides and dynamic, energetic speaking styles, they gave a fascinating overview of the NAS and how they work our regional air traffic. They also generously fielded endless questions from members and stayed well into the evening to chat. Truly a wonderful night!

If you haven't been to the EAA lately, we invite you to join us at one of our monthly meetings. We serve a fantastic dinner, have interesting speakers, and are a friendly group of people united in a love for aviation and all things airplane! Plus there's always dessert … and a great cuppa coffee! Come on down! Hope to see you there!

PS If you'd like to give Sam and Andy another well-deserved night off, please reach out to them. We know they'd love the help and will make it easy for you!

Young Eagles: Rally Schedule for 2025

The great minds who make EAA Chapter 124's Young Eagles program happen every year have finally met. Behind the scenes, holed away in various conclaves around the county, the Young Eagles committee has gathered via the modern miracle of Zoom and the interwebs. Much like when the Vatican selects a new Pope, the white smoke has emerged, and a new 2025 Young Eagles schedule has been announced!

Through our vibrant Young Eagles program, Chapter 124 has flown over 2500 young people on their first flight! Every year, we fly hundreds of kids and provide the first exposure for many of them to the airport, aircraft, and the flight environment. Beside their flight, every participant attends a short ground school put on by the Chapter and is given free access to Sporty's online pilot ground school.

Events always take place on Saturdays. Pilots gather with their planes early and ground volunteers transform the Chapter facility into a festival-like atmosphere. A collegiate energy abounds as everyone works together to pass the kids through the program, culminating with a flight around our gorgeous county. Often, their parents join them in the aircraft. Our pilots generously donate their time, expertise and aircraft, and the flights usually last 15 to 20 minutes, giving the children a bird's eye view of this wonderful area.

It's a fabulous day for the Chapter and a unique opportunity for all of us to give back to our community, come together for a worthy event, and have fun onsite and doing what we love.

If you haven't attended a Young Eagles rally lately at the Chapter, please come down and check it out. It's a great way to spend a Saturday morning. We always need extra help, and all are welcome. We hope that you take advantage and show up to support your Chapter.






For more information or to volunteer, please contact Chapter President Dominic Antonio Cerniglio via email (dcerniglio@mac.com) or phone (310 628 9008).

Basic Med Exams Available! Sonoma Skypark, March 2nd

Sonoma Skypark EAA and **Calvin Wojciechowski** have arranged for a physician to come to Sonoma Skypark to conduct Basic Med exams on Sunday, March 2, 2025, starting at 12 noon at the Skypark / EAA Clubhouse.

For more information, or if you would like to attend, contact Calvin at 707 721 6668. This is a great opportunity to get your Basic Med. The cost is $150 cash.

Special Event - 3rd Annual Challenge Air Fly Day, May 3

The 3rd Annual Challenge Air Fly Day is happening on Saturday, May 3 at the Sonoma Jet Center.

Challenge Air is a non-profit organization that flies kids with disabilities. For this special event, they are looking for pilots and ground volunteers to help give these children an unmatchable experience they will never forget.

If that sounds like a rewarding experience for you, please contact Chapter President Dominic Antonio Cerniglio via email (dcerniglio@mac.com) or phone (310 628 9008) for more information about the event and how you can participate.

Great Minds Think Alike...

Chapter members **John Swanstrom, Russ Wilcox** and **Dwayne Green** enjoy each other's company and discuss the finer points of flight during Thursday night ground school.

Articles

In Memoriam: David Hamilton, World War II Pathfinder Pilot Gone West at 102

David Hamilton, a decorated World War II Pathfinder pilot and American hero passed away on January 5, 2025, at the age of 102. Known for his bravery and exceptional service during some of the most pivotal moments of World War II, Hamilton's contributions during and after the war earned him the distinguished Flying Cross, multiple air medals and two Presidential Unit Citations.

You can read more about this remarkable pilot and watch a short video here. *(CommemorativeAirForce.org)*

XB-1 supersonic aircraft smashes sound barrier without explosive boom

"If you've been keeping tabs on aviation news as of late, you saw that Boom Supersonic just recently broke the sound barrier with its XB-1 demonstrator aircraft. Oddly enough, no one on the ground heard a thing during its "boomless" cruise."

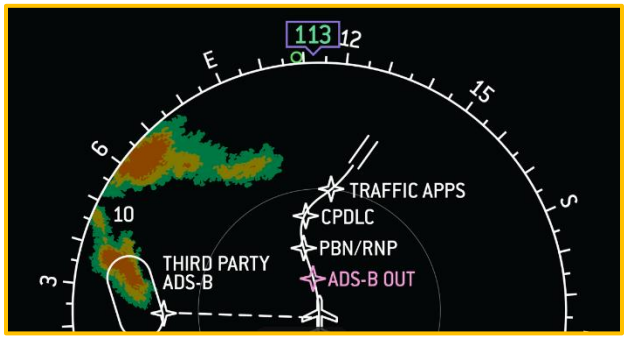
Read more about this exciting development and "the science behind the silence" here. *(Newatlas.com)*

On The Path to Cockpit Traffic and Weather – Today's ADSB

by Andy Werback

What is ADSB?

Automatic Dependent Surveillance Broadcast (ADSB) communications is the basis for the "Next Generation" of the FAA's Air Traffic Control. ADSB is dependent on all participating traffic to broadcast their GPS position, altitude, speed and other data. The advent of the Global Navigation Satellite System (aka GPS) was a key technical advance to make this possible.



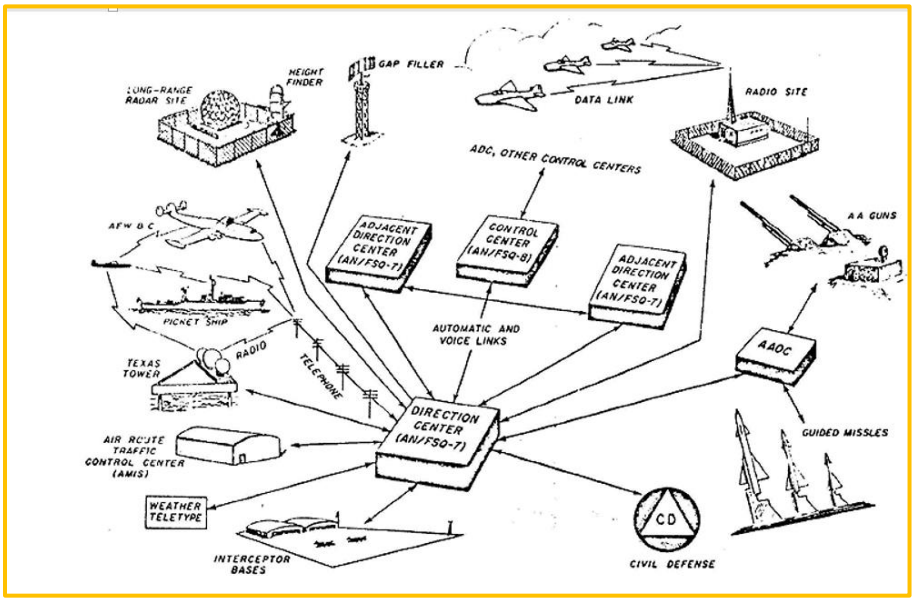
ADSB is very different from the ground-based radar network where raw radar returns or transponders provide data to detect and display traffic on a controller's radar screen. Ground-based radar can broadcast this information (as part of the Traffic Information Service - Type A (TIS-A)) to aircraft equipped with Mode-S transponders. However, only a few high-volume areas, such as Class B airports, were set up with radars equipped for TIS-A. And as a cost-saving measure, these are now being phased out.

A Little Background

Early air traffic control relied on enroute radio position reports – controllers would monitor this information and pass it along to the next station, providing a general idea of when aircraft would be passing reporting points along the way. Separation was achieved by maintaining fairly long distances between aircraft.

On June 30, 1956, a mid-air collision of TWA Super Constellation and a United Airlines Douglas DC-7 occurred over the Grand Canyon at 21,000'. Both aircraft had departed Los Angeles and were headed east to Chicago and Kansas City. One of the aircraft did a little maneuvering to provide a better view of the Canyon for the passengers. It was the worst airplane loss of life (128) at that time.

From that trigger event, today's radar environment grew out of the SAGE radar and communications network that was part of NORAD – North American Air Defense Command. In those days, computers needed a whole room and lots of air conditioning but at least they had "light pens" to designate traffic and information boxes to go along with each blip. The computer system itself (AN/FSQ-7) was developed by Massachusetts Institute of Technology (MIT) and built by International Business Machines (IBM).



SAGE (Semi-Automatic Ground Environment) Air Defense Network

In the civilian air traffic control system, aircraft were equipped with Mode A transponders – a radio receiver operating on 1090 MHz (1.09 GHz) – that would send back an identification (squawk) code to be displayed on the ATC operator's radar screen. This allowed for tracking and identification of individual flights.

Later, Mode C was added to include a standardized altitude report along with the ID code. This worked just fine for many years – a small box in the cockpit, assigned codes or VFR and emergency standard codes. Plus a biannual transponder and static (altimeter) test. You can learn more about the history of Air Traffic Control by clicking here.

Next Generation

The limited accuracy and resolution of the ground-based system, coupled with the availability of a highly accurate satellite-based navigation system, led to the development of the Next Generation of Air Traffic Control for better management of aircraft traffic.

The intent was to have detailed information about each aircraft's type, location, altitude, speed, etc. to an incredible level of detail. Each aircraft would be equipped with a precision Global Positioning System (GPS) receiver with multiple updates per second. A ground-based station would receive these reports, track and consolidate them, and retransmit the tracks to participating aircraft.

Based on the accuracy and timeliness of the reports, ATC controllers would be able to manage more traffic in a given area than they could with just radar. And, importantly, the system provided real-time information about traffic in their area and not just around Class B airspace.

The FAA also sweetened the pot by adding a data link with weather information – radar weather images, temporary flight restrictions, pilot reports, and other useful information for in-flight updates and navigation. This data link (at 978 MHz) provides ADSB-Out for operation in the US (1090 MHz is required outside the US).

Roll-out took a while…

ADSB took years to deploy the full set of ground stations (I flew to Oshkosh many times with a big gap in the states west of the Mississippi!) And even now, ADSB information is not fully integrated in the ATC Operator's information and displays. But it's getting there...
The FAA was also very slow to roll out a complete standard and provide validation of aircraft installation. But the good news is that now you can get a report and make adjustments to correct any installation issues. Plus the whole box can fit inside the wingtip nav light – WAAS GPS receiver and all.

My Early Experience with NavWorx

My first box was one from NavWorx. It sort of worked, but a lot of times it didn't. Ten years ago at Oshkosh, while discussing these issues with the NavWorx owner, I met up with an old friend (Bill D.) from Symbol Technologies where we had both worked on 802.11 (today's WiFi). NavWorx had contracted with Bill to rewrite the code in the box pictured here – after which it was much better but sorry to say, still had some issues. (For the record, I think NavWorx does work now because it's certified – but I switched over to Garmin.)

802.11 (WiFi)

In the meantime, 802.11 was developed - a digital communications system that's small, cheap, low power and easy to use, with an 'Ad Hoc' mode where stations can simply transmit data to anyone or listen and respond to form an ad hoc network. Adding and removing stations as things move around in the air is well suited to the Ad Hoc mode.

Born out of 802.11, modern day WiFi is now used everywhere and integrates nicely with GPS. Together with Bluetooth, it's used extensively for digital radio communications in radio control models and drones or anything that requires a little local area network. Even in your car and airplane, Bluetooth connects your iphone to the vehicle's electronics. And with the ADSB 978 MHz digital data link, we also get weather and TFR updates, for "free".

Interestingly, 802.11 is also the foundation of today's radio control models – airplanes, boats, cars. It provides a highly reliable method of transmitting commands to the model. And since it's a 2-way system, the model's electronics can send back a wide variety of data – in addition to battery status, it can send back real-time pictures/images, GPS location and other helpful information. And so we have UAVs, drones, etc.

Side Note: Creating a Patent for 802.11

While at Symbol Technologies, I wrote up a US Patent Application for 802.11 which got approved on May 1, 2007 (US Patent 7,212,918). Here's the abstract from the application:

(57) **ABSTRACT**

Methods and apparatus are provided for a traffic warning system (TWS) for light aircraft. The TWS comprises a processor coupled to a transceiver, adapted to measure signal strength and send/receive messages containing station ID and preferably altitude and position data. Memory, display and various flight data instruments, such as GPS, altimeter, etc., are also coupled to the processor. The transceiver-processor automatically identifies TWS equipped aircraft within range using an ad-hoc network and exchanges ID and position information. The processor determines range from signal strength and/or received position information and, given enough data, determines direction, altitude, speed, etc., of the other aircraft, which it presents to the pilot. These values and their rate of change are compared to stored alarm thresholds, and the pilot is warned when another aircraft triggers the threshold. Evasive action is recommended where possible.

And a diagram to show how it might work:

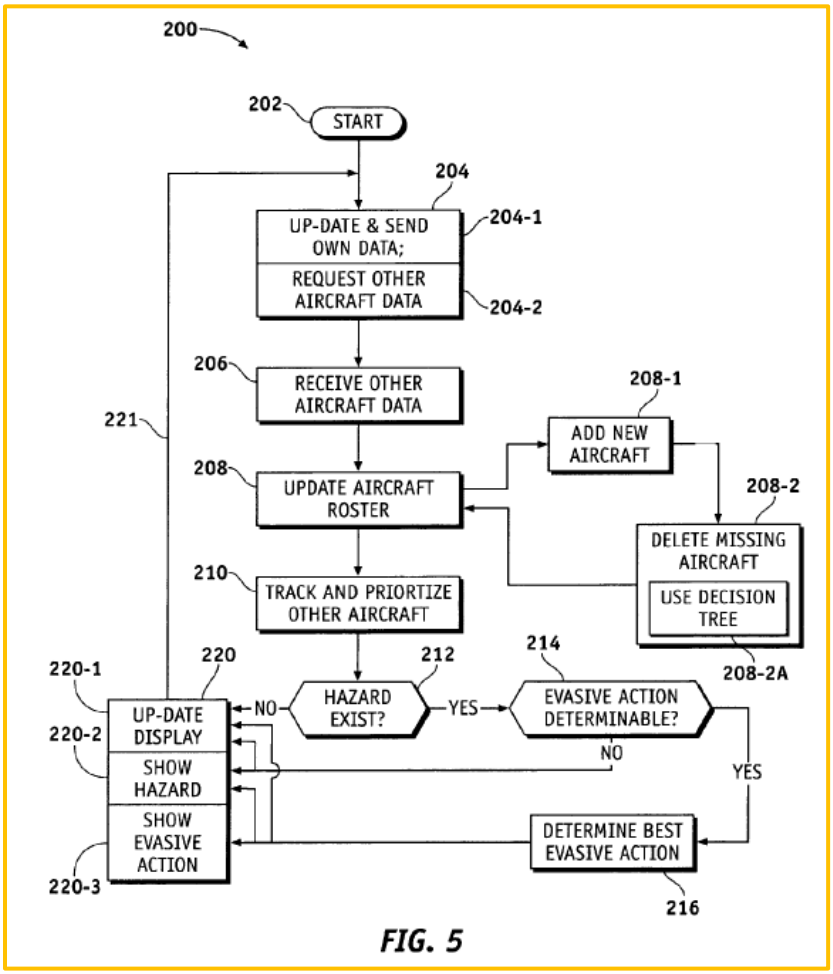


FIG. 5

This patent is actually more comprehensive than ADSB traffic provides for – it's a Traffic Warning System which can give collision avoidance commands or advice. It's a little like TCAS, but thanks to specific data from other traffic giving their position, heading and altitude, we know range, time/distance and can make specific recommendations for traffic avoidance. Unfortunately, with the rapid development and adoption of WiFi, our patented box didn't go anywhere.

By the way… – What *is* ADSB?

ADS-B has the following characteristics:

- It's **Automatic** — It transmits location and other information, every second (vs. transponder every 5 to 12 seconds), with no pilot action.
- It's **Dependent** — It is dependent on the aircraft being equipped with a rule-compliant position source and signal transmitter.
- **Surveillance** through GPS information — The signal includes aircraft position and velocity vector derived from the position source, which is typically a GPS receiver. Position accuracy is not affected by the distance from the ground station.
- **Broadcast** of the aircraft's position — ADS-B equipment automatically transmits data to controllers and to any aircraft equipped to receive ADS-B. ADS-B targets display in real time.

In other words, that is one complicated acronym!

Automatic: Radar and Mode C or Mode A transponders were also automatic, although the code could be changed in flight. ADSB setup includes all sorts of information, so the FAA knows exactly what aircraft you're flying.

Dependent: Transponders fit this requirement too.

Surveillance: More like the ground stations "surveil" the signals and plot the aircraft positions. As in "Surveillance Radar" except that the ADSB equipped aircraft reports its position rather than plotting the radar returns.

Broadcast: Well, again, transponders do broadcast. TCAS already uses that signal for collision avoidance. TCAS is "Traffic Alert and Collision Avoidance" – there's an acronym that means what it says.

Chapter Business

EAA Chapter 124 General Meeting Minutes

February 5, 2025

Meeting Convened: 7:10pm

General Updates: The president called the meeting to order and recognized **Marlon Young** and **Bill Conklin** for making an amazing dinner. The president asked new visitors to introduce themselves to the group. **Rick Dabney** was recognized for helping with the automated hangar door. **The Cingaris** were also recognized for their contribution towards bettering the facility. **Campbell Potter** (Certified Flight Instructor) was thanked for his contribution to making the first ever Chapter-organized Ground School a reality.

Young Eagles: The Young Eagles schedule has been set for the following dates:

- Saturday 4/26/2025 Lampson Field "Splash In" event, Lake County
- Saturday 5/17/2025 EAA Chapter 124 Facility
- Saturday 6/7/2025 EAA Chapter 124 Facility
- Saturday 8/16/2025 EAA Chapter 124 Facility (In Honor of "National Aviation Day")
- Saturday 10/18/2025 **TENTATIVE** Possible date

In Memoriam: The passing of long-time member **John Raine** was recognized. He was fondly remembered by several members.

Treasurer's Report: The treasurer reminded attendees that this meeting is the last time a member can renew and still get their name in the roster. The Chapter posted a financial surplus this month. In general the coffers remain in a healthy state. **Andy Werback** shared pictures of his flight over the Moss Landing power plant which suffered a lithium battery runaway overheat scenario, causing a destructive fire that consumed an entire building.

Presentation: Jordan Haines and Nick Navarro, two current air traffic controllers, shared their experiences as air traffic controllers. They pointed out that while both of them are pilots, fewer and fewer air traffic controllers are certified pilots. They pointed out that 45,000 flights a day are handled by 10,000 controllers. The speaker pointed out that the FAA is short staffed by 4,000 controllers. They revealed that Oakland Center has oversight over 18 million square miles of the Pacific Ocean and Western U.S. landmass. The two guest controllers covered some basic ATC verbal identification practices that help the controllers locate the targets. They mentioned that proper geographic self-reporting is very important. They made a point of illustrating the increasingly busy air corridors around Santa Rosa. They recommended Fly Charts which isolate allowable altitudes. They shared the suggestion that when transitioning from one sector to another, it is important to clearly state your destination. The speakers shared details behind their training regime. They pointed out that in their recruitment year there were 25,000 applicants, but by the time they graduated from Oklahoma only 1,500 graduated.

Meeting adjourned: 8:38pm

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EAA Chapter 124
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Windsor, CA 95492

Chapter meetings are held on the first Wednesday of each month at 7:00 pm. FOOD ($10) AND SOCIALIZING (free) from 6:15 to 7:00 pm. **EVERYONE IS WELCOME!**

Directions: The site is located on the west side of Sonoma County Airport. Take the Shiloh Road exit from Highway 101 in northern Santa Rosa. Turn left at the stop light (west) and continue to a "T" intersection. Turn left again and follow the road to the EAA sign on the left.

How to Submit an Article to the Newsletter

Members are invited to submit articles of interest. You will be notified whether or not an article will appear in the current issue.

Email your article to: jennyhollingworth14@gmail.com

Deadline for newsletter submissions is the 20th of each month. Articles submitted will be included in the newsletter at the discretion of the editor. All articles are copyrighted. To reproduce any article, please contact the editor.

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