



2025

EAA CHAPTER 485 - JANUARY

HAPPY
NEW
YEAR!

PRESIDENT'S NOTES

Thanks to all the twenty-two folks who were able to attend our Holiday Dinner on December 14th. I noted that there were at least four generations of aviators present—possibly six including the Zetterlinds' infant daughter!—everyone from our senior member Bill Miles (age 98), to two 16-year-old applicants for the Ray 2025 scholarships. Cool!

Clubhouse HVAC install: Lots of work involved with this...Many thanks up front to John McKiernan for heading up the effort. All required equipment and landscaping material was delivered the week before Christmas, and John McKiernan did some prep work. On December 21st, John led the group of Scott Swanson, Tom Johnson, Bill Diaz, Craig Spoke, Ralph Moser, Mark Rogers, and Virgil Zetterlind through part one of the installation. Some clubhouse cleaning was also accomplished. As I write this, several other steps are in progress. We hope to have this project done by the January 11th meeting.

Anonymous scholar progress: In November, Sean Londrigan finally got his FAA Medical. In early December, he chose Lightning Aviation for his flight school. He returns from winter school break January 4th, and plans to start flight lessons at that time. Cody Stebbins passed his written in November and resumed his flight training at that point. He hopes to solo before our January 11th meeting. As I submit these notes for the newsletter, Ethan Smith has his checkride scheduled for January 2nd.

We eagerly look forward to another successful, safe year of aviation-related activities in Chapter 485. We have tours planned at the National Flight Academy, Pensacola Approach Control, and Paradigm Parachutes. I hope to see you at our first meeting on January 11th!

—Ralph

RAY AVIATION UPDATE



Sophia and Instructor Dalton Fristoe

The past month has been exciting for the Ray Scholars.

Samantha Watkins continues to work on her flight training. Samantha is working towards her Instrument rating and is looking for a DPE to schedule her check ride soon.

Sophia Almond completed a major milestone Tuesday, 11/26/2024. She completed her first **SOLO!!!!** She already has her written out of the way so now all that is left are cross countries and preparing for her check ride. Way to go Sophia...

—Craig Spoke

DRANO'S 750 UPDATE

Last month I mentioned that I was working on plexiglass. I didn't have a lot of prior experience working on this stuff, so I had a lot to learn. Like anything else in building an airplane, the material has to be cut, shaped, and fastened—except Plexiglass is not like anything else....it can be brittle. This is significant since pound for pound, I think the Zenith 750 has more plexiglass than other plane except maybe a bubble Bell helicopter so there is a LOT of cutting, shaping, and drilling to fasten things together. There are over 150 rivets just to hold the 4 rear windows in place!



All the plexiglass I received was grossly oversized so fitting and cutting it was the first challenge. The instructions said to use an angle grinder with a cutting disc. I tried. If you have ever held one and turned it on, you know about the instant torque and twisting momentum you have in a heavy tool in your hands. Cutting one eighth inch plexiglass with one of these things is like trying to water your grandmother's potted peonies with a fire hose. Some of the tolerances on the cuts were rather close so I gave up on this idea early. Ok, next I thought I would turn to the old tried and true Dremel with a cutting disc. It worked but it was painfully slow, and I was going to be one hundred years old still cutting this stuff.



Scott Miller told me he had seen someone use an oscillating versatile tool with a rounded blade so I thought I would try that. Walla! There is a technique to it, but it is fully controllable, and exact cuts can be efficiently made. This tool is definitely what you need if you are going to cut as much plexiglass as my 750 requires.

DRANO'S 750 UPDATE CONTINUED

Drilling Plexiglass for screws and rivets requires special bits. A regular bit will grab the plexiglass material, twist and crack it. A plexiglass bit (as seen on the left) has a greater angle on the tip so it doesn't "bite" into as much material at a time. They work great but even with special bits you have to be careful not to crack the glass.

Final trimming comes down to files and 80 grit sandpaper. For the larger trimming requirements, I used an air driven, angle die grinder with an abrasive pad. Worked great! It even sounded like I knew what I was doing.

In summary, the windshield is now fitted and drilled for final installation, the doors are assembled and fitted, the plexiglass roof is fitted and drilled for installation. I will leave the rear windows to the very end to facilitate access from the side during assembly. Progress is being made, and I am confident I can now finish before I turn one hundred years old. I'll keep you informed!

—Drano





10 TIPS FOR BEING A BETTER SLEUTH

PREFLIGHT INSPECTIONS ARE MORE THAN BUSYWORK

PILOTS TOO OFTEN TREAT PREFLIGHT INSPECTIONS as busywork—especially with rental aircraft. A flight school trainer might have flown several times by the time it's your turn to take it up in the afternoon. Surely, anything wrong with the airplane would have been caught during previous preflight inspections. Right?

Don't be so sure. Take each preflight inspection with the seriousness it deserves because it's likely your last chance to spot a problem on the ground that could become an in-flight emergency.

Don't rush. It's tempting to hurry through a preflight inspection to maximize flight time. But a hurried inspection can be as bad as none at all.

Be suspicious. Each inspection should be a game of "What's wrong with this picture?" Look for subtleties and take on the mindset of a detective seeking important clues.

Ask questions. Talk to the pilot who flew before you about any anomalies. Did everything work perfectly throughout the flight? Is there anything you should pay particular attention to on yours?

Seek advice from mechanics. Do they have any tips for the airplane you're preparing to fly? Does it have any unusual traits? Has there been any recent maintenance work done to it?

Start your preflight inspection in the same place and walk around the airplane in the

same order. Such habits are like cockpit flows where one action leads logically to the next.

If you get interrupted during an inspection, go back and retrace your steps so that no critical task is overlooked.

Know what to look for, and why you're looking for it. Don't just say, I'm looking for a puddle of fluid on the ground. Be aware that you're looking for red hydraulic fluid that could indicate a leak in the braking system signaling an impending failure.

A clean airplane is a safe airplane. Dirt and grime can mask cracks, oil leaks, and unusual wear. Keep the airplane you fly clean to make it easier to find drips and stains that can be early warning signs of future problems. A clean windshield just makes life better.

Touch things. Don't just look at them. Shaking a flap shows you whether there's excessive wear or play. Lifting the elevator and moving the rudder can show whether they bind. Pushing the airplane slightly forward or aft can reveal flat spots on the tires as well as proper inflation. Running your hands over the leading edge of the propeller can reveal nicks or cracks you might not see.

Open the fuel caps to visually confirm fuel quantity. Pay particular attention to any suction in the caps that can indicate the tanks aren't properly venting.

dave.hirschman@aopa.org

AVOID FUEL MISMANAGEMENT

Fuel mismanagement is a common problem among GA pilots. According to the latest Nall Report, there are nearly 70 fuel-related accidents per year. Be prepared and know how to properly monitor fuel consumption, ensure correct operation of fuel systems, and combat unsafe mindsets and habits. airsafetyinstitute.org/safetyvideos/fuelmanagement

CHECK YOUR NOTAMS

AOPA-ISSUED PRESIDENTIAL TFR ALERTS

TEMPORARY FLIGHT RESTRICTIONS (TFRS) ARE REGULATORY measures that restrict or prohibit access to certain areas of airspace for a limited time. Designated by the FAA, these transitory areas vary in dimension and associated restrictions based upon the event prompting the TFR and are communicated to pilots via notices to air missions (notams). There are all sorts of TFRs, the largest of which by far are the VIP presidential TFRs, which typically boast a 30-nautical-mile radius and extend up to 18,000 feet msl. These restricted areas can pop up on short notice, suddenly extend in duration, and unlike stationary TFRs can change location as they follow the movements of the U.S. president. Busting a TFR can land you in a world of hurt, and the consequences of violating a presidential TFR are particularly severe.

We've all heard a horror story or two: A young pilot putters along in familiar airspace on a beautiful day and, having forgotten to check notams prior to their flight, suddenly finds they are flying formation with military aircraft (services unsolicited) notifying them they are flying in restricted airspace. The forgetful pilot is then escorted on what I'll coin as "the flight of shame" to the nearest suitable airport. The bureaucratic nightmare only begins here. The consequences can include suspension or revocation of your certifications, a \$100,000 fine, civil penalties, and up to a year in a federal slammer.

A surefire way to fly sans armed intercept through areas where these presidential TFRs may appear is to simply review notams before every flight by checking the FAA's TFR map (tfr.faa.gov/tfr_map_ims), utilizing reputable flight planning apps, calling flight service, and/or requesting VFR traffic advisories (flight following). For further peace of mind, all AOPA members are automatically opted in to receive AOPA's presidential TFR email alerts which provide pilots with pertinent information. These alerts are sent to members who live 250 nautical miles or closer to the center of a given presidential TFR and are followed up with time and location updates by our senior aviation technical specialists should changes occur. The alerts are provided courtesy of AOPA and should not be solely relied upon, but rather considered a supplement to your preflight planning.

chad.jones@aopa.org
aopa.org/go-fly/tfrs
tfr.faa.gov/tfr_map_ims

ADDRESS CHANGE?

Send your new address and AOPA membership number to AOPA:

aopa.org/apps/myaopamembership

421 Aviation Way
 Frederick, Maryland 21701-4798

TOLL-FREE PILOT INFORMATION CENTER

800-USA-AOPA (872-2672)
pilotassist@aopa.org

AOPA MEMBER BENEFITS

aopa.org/benefits

AOPA AIR SAFETY INSTITUTE

800-638-3101
airsafetyinstitute.org

AOPA AIRCRAFT FINANCING

800-627-5263
aopafinance.org

AOPA PERSONAL INSURANCE

800-USA-AOPA (872-2672)
aopa.org/membership/personal

AOPA CREDIT CARD PROGRAM

877-787-3171
aopa.org/creditcard

AOPA FOUNDATION

800-955-9115
aopaoundation.org

AOPA PILOT PROTECTION SERVICES

800-USA-AOPA (872-2672)
aopa.org/pps

AOPA MEMBER DISCOUNTS

aopa.org/offers

AOPA PILOT INFORMATION CENTER HOURS

Do you have questions or need information about an aviation topic? Access the team of aviation experts in our Pilot Information Center during our convenient weekday hours. Call 800-USA-AOPA (872-2672) Monday through Friday, 8:30 a.m. until 6 p.m. Eastern time, with your questions and our staff will be happy to assist you.

Visit the website (aopa.org/membership) to learn more about the benefits of AOPA membership.

AOPA's presidential TFR email alerts are produced and distributed by the AOPA Pilot Information Center, which is staffed by 14 professionals with decades of experience, providing top-tier technical assistance and information on FAA regulations, medical certification, aircraft ownership, flight training, pilot certification, international operations, Customs procedures, flight planning, and a multitude of other aviation topics. Call 800-872-2672 or email pilotassist@aopa.org for knowledgeable support Monday through Friday, 8:30 a.m to 6 p.m. EST.

“Energy Management” —Cliché or Exactitude?

by ED WISCHMEYER

“Energy management” is not a precise term. It is used in different ways to express different things, so it almost always requires clarification. Often, a speaker will say “energy management” and expect the listener to understand without any further explanation.

Aviation safety is too important to tolerate vague phrases like “energy management” that facilitate misunderstandings.

The Big Ambiguities

Energy management often talks about kinetic and potential energy as the two kinds of energy. But:

- Kinetic energy is defined as mass times $\frac{1}{2}$ speed squared. We can simplify by talking about weight and not mass, but what kind of speed? Indicated airspeed, true airspeed, or groundspeed? It matters. Airplanes flying through the air have kinetic energy measured with true airspeed but, upon ground contact, dissipate kinetic energy measured with groundspeed.
- Using that mass/weight simplification, we can define potential energy as weight times height. But height above what? If it is height above ground, properly called absolute altitude, then potential energy will increase and decrease rapidly when flying over buildings and streets in a city. Or if the reference is mean sea level, then an airplane at 5,500 feet will have the same potential energy flying high above low-lying Florida as it will on short final approach to Denver.
- And a complete discussion gets involved: drag dissipates airspeed, thrust can offset that dissipation or can increase speed or altitude, and rotary wing aircraft store energy in the rotation of the rotor.

So if the objective of using “energy management” is to communicate concepts accurately and precisely to help pilots fly their airplanes, details must be clarified.

Spoiler Alert!

...and we’re not talking about sailplanes.



“Energy management” is not self explanatory and means something much different to an aerobatic pilot.

Here are key ideas that a full discussion, much too long for this article, of “energy management” would bring out:

- “Energy management” sometimes just means airspeed, as in “energy to flare” or “enough energy for an aerobatic maneuver.”
- In aerobatics, “energy management” can also mean minimizing speed loss by not pulling too hard on the stick, pulling too many Gs, and creating excessive induced drag.
- “Energy management” can, however, be meaningful when distance to and altitude above a fixed point are part of the discussion, such as Bob Hoover’s engine out performances in the Shrike Commander, a sailplane on final glide, or descending to a landing. But that distance to a reference point is normally implied, not stated. Even in this case, “energy management” is not self-explanatory but has to be expressed in terms of airspeed and altitude.

Airplane Flying Handbook (FAA-H-8083-3C)

Can an official FAA publication help understand the concept, or is it mired in trendiness? This publication from the year 2020 contains the [Chapter 4, “Energy Management: Mastering Altitude and Airspeed Control.”](#) As an FAA document, with the title implying that the handbook is about flying and hence for pilots, you’d expect it to be about flying, and to be accurate, relevant, and easy to read. It’s not. It is theoretical, full of abstractions, charts and diagrams that complicate things far beyond easy understanding.

How bad is it? All these terms appear in Chapter 4 to explain “energy management:” Energy Balance Equation, Energy Error, Energy Distribution Error, Total Energy Error, Energy Exchange, Energy Height or Total Specific Energy (E_S), and Energy System. Maybe it’s just me, but I’ve gone a half century as a pilot and as an engineer without encountering any of these terms.

Does the following statement help pilots fly the airplane, or understand the process?

“Energy management can be defined as the process of planning, monitoring, and controlling altitude and airspeed targets in relation to the airplane’s energy state...”

As if to prove my point, that sentence had to revert to airspeed and altitude for explanation.

Then there’s the phrase, “The elevator is the energy distribution controller,” an abstraction that requires considerable explanation. Or the “energy map” (Figure 4-7) showing specific excess power, another abstraction. What pilot thinks in terms of “energy map” when flying?

When I was working on my Ph.D. at MIT, my thesis advisor, an MIT Ph.D. himself, a retired navy Captain, fighter pilot, and CFII, told me that for teaching ground school, even to MIT students, not all of whom were techies, to speak their language. Word for word, he said to me, “The wing is the thing.” to result.



A Significant Error in the Airplane Flying Handbook (FAA-H-8083-3C)

My expectation was that with all its abstractions, The [Airplane Flying Handbook](#) would have its facts straight. Not so. The handbook states that kinetic energy is associated with indicated airspeed. This is flat out wrong on two counts:

- Indicated air speed is what is shown on the airspeed indicator. It does not take into consideration any errors in the pitot/static system or in the instrument. Calibrated airspeed is the correct term for indicated airspeed with errors removed.
- But that's not right, either. The kinetic energy of an airplane relative to the air is derived from true airspeed, the actual speed of the airplane through the air.

For example, jets at altitude will have an indicated airspeed about half of the true airspeed. A jet cruising at 480 knots has 480 knots worth of true airspeed-referenced kinetic energy, not 240 knots indicated worth.

However, at low altitude, the indicated and true airspeed are often close to each other, so the indicated/true airspeed error is not always significant.

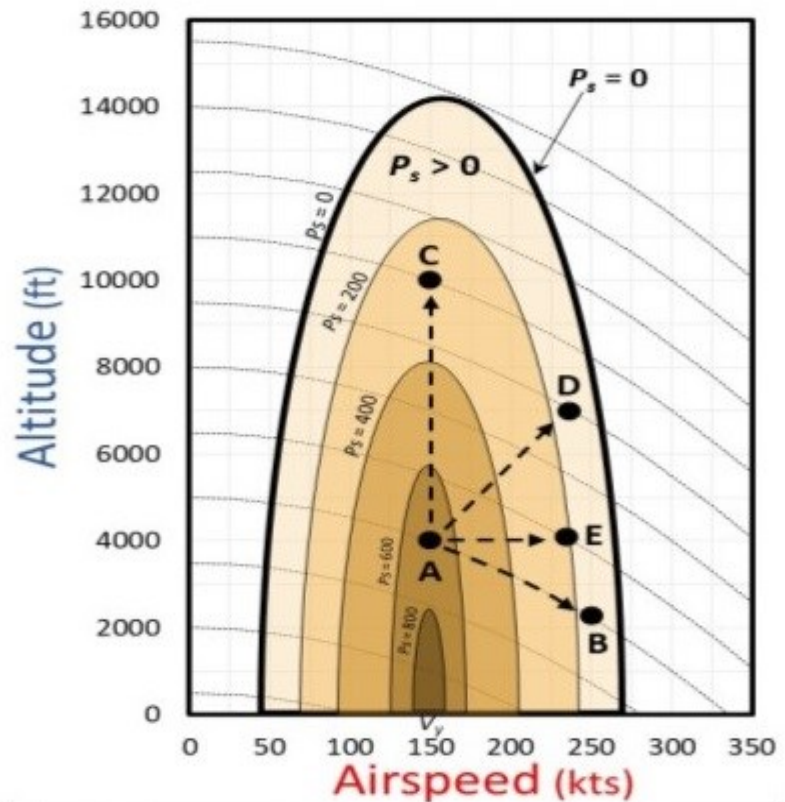


Figure 4-7. Energy map depicting specific excess power (P_s) contours (shown in feet per minute) and energy trajectories for a hypothetical airplane.

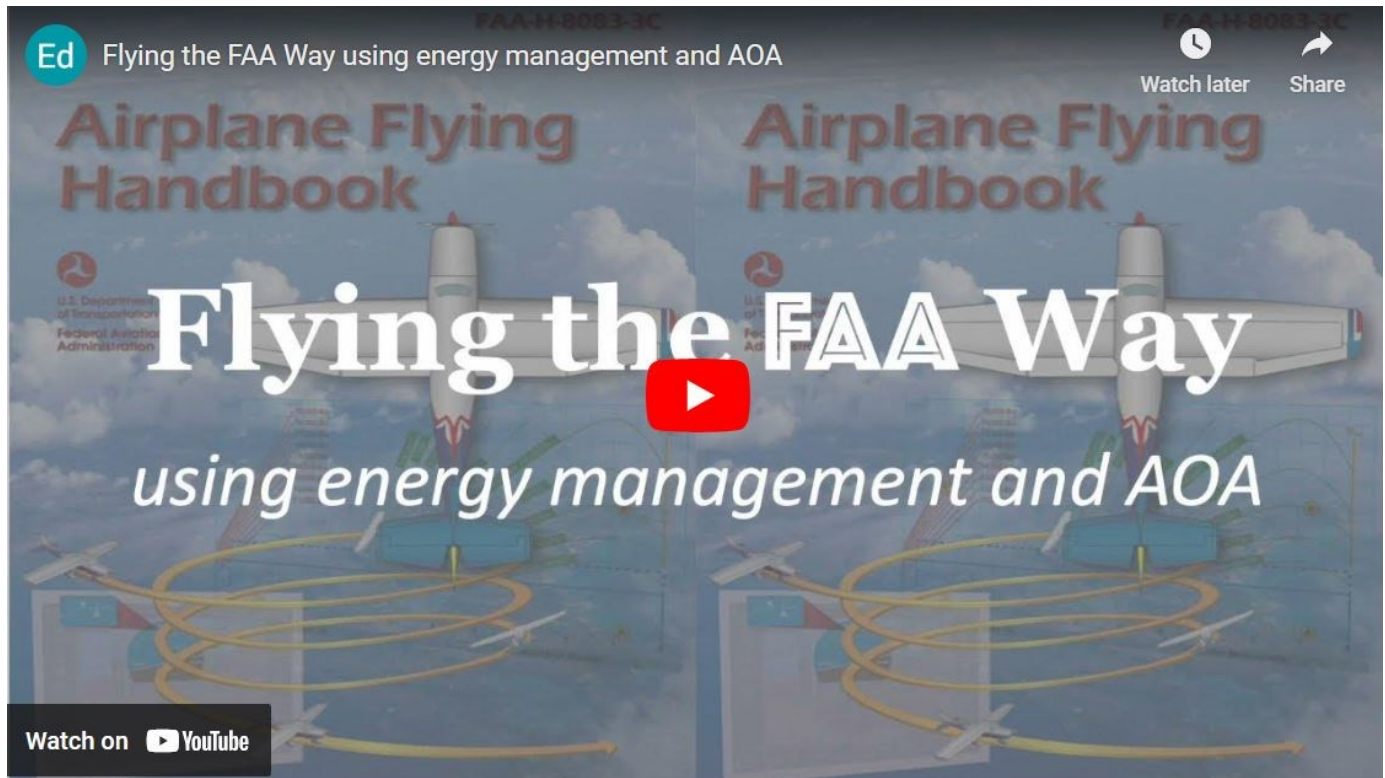
The Meat of the Issue

1. Pilots fly airplanes with respect to airspeed and altitude, the quantities used in Airplane Flight Manuals. AFMs do not specify aircraft performance with respect to energy. Neither do speed and altitude operating restrictions, nor do airspace restrictions nor ATC instructions reference energy management.
2. Concepts are most useful when they apply directly to displayed information and available controls. Unnecessary abstraction requires translation from instrument readings to concept to decision making and back to control inputs. These translations are extra workload and decrease the pilot's ability to handle other tasks, such as maintaining situational awareness.
3. While an airplane in flight possesses both kinetic and potential energy, there are no cockpit instruments which *directly* measure either one and display those measurements in units of energy.
4. In the cockpit, the stick/control wheel moves the elevators, and the throttle adjusts engine power. While both are used to affect airspeed and altitude, neither one directly controls only kinetic or only potential energy.
5. There is no cockpit guidance on how much altitude rate will give how much airspeed change, or vice versa. Rather, this "energy management" tradeoff is done ad hoc.

6. Old fashioned explanations are simpler, more direct ways to teach pilots what they need to know without getting as abstract as energy management. In other words, the pilot is the customer, so speak the pilot's language, not the dialect of the instructor. (The point of this article is clear expression of concepts, not a discussion of flight mechanics, so the many varieties of airspeed/altitude/throttle explanations will not be discussed here.

The bottom line is that energy management is an abstraction that is not operationally necessary for flying an airplane. It can be useful to help some people understand concepts, but it is more likely a stumbling block.

[CLICK HERE](#) to watch video



Video (satire): Flying with Kinetic and Potential Energy

Here's a trip around the pattern, recorded live, referring only to kinetic and potential energy, not airspeed and altitude. Yes, it can be done, and technically, it makes sense, but is it helpful? Note that no direct quantitative energy measurements were available or stated, and that airspeed and altitude were the primary information sources when flying the pattern but were never acknowledged.

The Last Word, from Gilbert and Sullivan

In the much loved and still regularly performed 1885 comic opera, *The Mikado*, self-absorbed Pooh-Bah presently describes the misuse of "energy management" when he says, "Merely corroborative detail designed to give artistic verisimilitude to an otherwise bald and unconvincing narrative."

In other words, say what you mean! Don't hide important thoughts about airspeed and altitude behind fancy phrases like "energy management" and expect meaningful communication to result.

January 2025

EAA and Local Chapter Sites

- [EAA 485](#)
 - [EAA HDQTRS](#)
 - [Interesting Links](#)
 - [Blue Angel 360 Way cool](#)
 - [Making the First Airbus 220 Time Lapse](#)
 - [Jetman Unleashed in Dubai](#)
 - [Boeing 737 Time Lapse Build](#)
 - [F-18 Low Level](#)
 - [High Speed Carrier Maneuvering](#)
 - [Miscellaneous](#)
 - [1800wxbrief.com](#)
 - [FAA Notams](#)
 - [Barnstormers](#)
 - [Skyvector.com](#) Flight Planning, Charts
 - [AirNav.com](#) Airport info, Fuel Prices
- [EAA 1265](#)
 - [EAA 108](#)

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Ray Scholarship Coordinator:	Craig Spoke (251) 550-5795
Young Eagles Coordinator:	Eric Goldman (317) 910-2513
Webmaster:	Doug Francisco (850) 453-5501

Normally meetings will be held at [Roscoe Field Airport \(82J\) \(Uni 122.8\)](#) on the **Second Saturday of each month at 10:00 AM unless otherwise posted. If flying in, check NAS Pensacola (KNPA) NOTAMS for possible TFRs and the Roscoe Field Airport website under the Arrivals tab for important arrival and departure information.**

Driving: From Hwy 98 go past the main airport entrance and take the next left. Go thru the gate and make a left on the gravel road. Make a right past the T hangars you'll see our building down on the left side. Anyone interested in sharing general aviation, aircraft building, maintaining and restoring is welcome.
For more info contact:
[Ralph Moser](#) (847) 736-4603





Home Of The
PANHANDLE PELICANS

EAA 485 Pensacola, FL

Get Your Chapter Ballcap

We have ballcaps with chapter logo for sale for \$20. Get yours before the price hike. The next batch will be more expensive so don't wait!

Upcoming Events

(CHAPTER EVENTS IN CAPS):

February 8: 0830-0930 VMC/IMC MEETING at clubhouse, then **1000-1030 CHAPTER MEETING** at Museum of Naval Aviation Little Theater, then **1045 Flight Academy Tour**, then **Noon Lunch Westpac Room Cubi Restaurant**

March 8, MONTHLY CHAPTER MEETINGS + PNS Tracon Tour

April 1-7, Sun'n Fun, Lakeland, FL (LAL)

April 12, MONTHLY CHAPTER MEETINGS

April 19th, SPRING YOUNG EAGLES RALLY (Tentative)

July 21-27th, Air Venture Oshkosh

September 10-14th, National Championship Air Races (KROW). AirRace.org

Chapter Meetings:

Saturday, January 11th, 2025

08:30-09:30, VMC/IMC Club Meeting.

10:00-11:00, General Membership

Meeting:

Pledge

Guests

Officers Reports: President, Vice -President, Secretary, Treasurer/ Membership

Ray Scholarship – Craig Spoke

Young Eagles – Eric Goldman

Member Build Projects Update

Guest Speaker – NAS Whiting Local Airspace Briefing

Adjourn

Cheeseburger Lunch– Dining Room

Ray Scholarship Applicant Student Pilot Endorsements-Meeting Room

CHAPTER DUES: Get an early start for 2025—dues are \$25 per year and can be paid during the meetings or mailed to [Scott Swanson](#).

Scott Swanson

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