Next WingNuts Chapter Meeting: ***Sat. March 11, 2023 12:00 PM – Hunter International Air-Field***

Next VMC Club Meeting: ***Tues. March 28, 2023 6:00 PM - Hunter International Air-Field***

WINGNUTS PLANE TALK

Chapter 1321 / South Middle Tennessee

Our Chapter Home Page: https://chapters.eaa.org/eaa1321

***Editor's Note:** Reminder, you can now click on the page number in the index for the article you'd like to read and you will automatically go to that page!*

To go back to the Index, select the word "page" at end of article

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PRESIDENT'S CORNER:

Hello everyone,

I have been out of town on an extended vacation, attending a reunion with the guys I served in Vietnam with. So, my letter is a little short this month.

I want to thank Glen Smith for his presentation on Coax Cable Connectors during last month's meeting.

I look forward to seeing you are our upcoming meeting this Saturday

I have two items for Chapter Discussion:

- A Chapter trip to the Air Force Museum
- EAA's new Flying Start Program for adults interested in becoming pilots upcoming in May

The meeting presentation will provide an introduction to a series on Aeronautical Decision Making

Craig Bixby
President

Secretary's Minutes from the 2/11/23 Meeting

Chapter 1321 met at Hunter Field on February 11, 2023, presided over by our new President, Craig Bixby

Chapter Decals have arrived and are available for purchase for $5.00

Bob Johnston asked about interest in a Chapter trip to the Air Force Museum.

Glen Smith made a nice presentation on Coax Cables and how to properly crimp a BNC Connector to the cable.

Reminder: It is time to pay your $20 Chapter Dues. Please see Jim Tjossem!

FLYING

STCs for G100UL

General Aviation Modifications, Inc. (GAMI) is now selling supplemental type certificates (STCs) for its G100UL high octane unleaded avgas—the first and only approved solution for all general aviation piston aircraft.

In order to purchase the STC, pilots will need aircraft and engine information including N-number, aircraft model and serial number, and engine manufacturer/serial number. STC documents will then be delivered via PDF immediately and placards will be mailed within about 10 days.

As an early adoption incentive, pilots who purchase the STC on or by March 31 will be eligible for a "First Fill Up Rebate" of $100. According to GAMI, customers can submit a copy of the first G100UL high octane unleaded avgas purchase receipt from the FBO when the fuel becomes available in their area.

"The FAA approval of G100UL high octane unleaded avgas is a truly huge development for the future of general aviation!," said GAMI president Tim Roehl. "GAMI and all of its employees have dedicated themselves to this project for over a decade. Now is the time for all of the stakeholders in the general aviation community to stand up and celebrate. These AML-STCs are the 'beginning of the end' for the continued use of lead in aviation gasoline."

While costs for the G100UL STC vary depending on aircraft engine and horsepower, GAMI says pricing will be roughly the cost to fill up their tanks with avgas. For aircraft such as a Cirrus SR22, Piper PA-32, or Cessna 210, the STC will be around the $600 range.

How Much Will the Fuel Cost?

As far as the fuel itself—GAMI estimates a price slightly higher at about 60-85 cents/gallon more than the current 100LL.

Initial rollout of the fuel won't begin until later this year—starting with California. GAMI anticipates all West Coast states to roll out the fuel by 2024, with national availability by 2026.

Drone Collision

Editor's Note: Well, it isn't bad enough that we must deal with the threat of a midair collision with another aircraft. It is now becoming apparent that we face a danger from having a midair with somebody's Drone!!!!

During a chase for an armed suspect, the operator of a Canadian police surveillance drone didn't tell air traffic control (as required) they were operating near a busy airport in Toronto.

The drone collided with a Cessna 172

The problem with drones… You may be able to see them as a dot in the sky from the ground. But, you can't see them in a hover from the air. When a drone isn't moving, it blends perfectly into the ground clutter. You will not be able to see or avoid it. And, they are small enough you probably wont see them even when they are moving!!

A person on the ground saw a guy playing with a drone 800 ft from the approach end of a runway where helicopters were landing. He knew the pilots in one of the helicopters that were making an approach to land right over the drone.

When he asked the pilots if they saw it, they said they saw nothing.

The Aviation Consumer

Staying in Control: Training For The Worst

It's a sad fact that loss of control continues to be the most common accident cause. The good news is that training can reduce your level of risk.

By Rick Durden

We're good pilots—by and large. Getting our certificates and ratings wasn't easy. Face it, we sweat blood training to master the skills, knowledge and judgment needed to cause an inanimate object to rise into an often unforgiving sky and return to the planet not only safely, but with some degree of panache.

In the process of achieving a level of mastery of aeronautical maneuvering we often—but not always—avoid disaster through the quick thinking and skills of the flight instructor in the other seat.

Once the safety net of the CFI is withdrawn we begin to discover, sometimes painfully, that piloting skills erode—with distressing speed. Which is why the NTSB continues to report that the most common cause of general aviation accidents—fatal and non—is loss of control (LOC).

Um, are you doing this on purpose or was it wake turbulence? Now what? Upset recovery training can make the difference between an adrenaline event and a smoking hole.

To add insult to that injury, the NTSB finds that in almost 100 percent of LOC accidents the PIC either started the loss of control through his actions or could have broken the chain leading to the crash with appropriate control inputs.

If that's not a plea for pilots to take recurrent training in basic piloting skills, we've never heard one.

After all, at some point in their career, every pilot demonstrated the ability to make crosswind landings, go-arounds, recover from unusual attitudes/upsets and generally do what was necessary to return an aircraft to earth within a few feet of the desired location and then get it to a tiedown without causing structural damage.

To us, that means that, unless that pilot has suffered the onset of illness that has significantly diminished her physical or mental abilities, some training designed for loss of control prevention and/or recovery will return that pilot to a proficiency level satisfactory to avoid becoming the central character in an NTSB report.

UPSET RECOVERY TRAINING

The FAA's definition of upset is a good place to start a discussion on upset recovery—it's when the flight attitude or airspeed of an aircraft is outside of the normal bounds for which the aircraft is designed.

Dealing with an inflight LOC is the purpose of dedicated upset recovery training courses. In short, they teach how upsets/LOC-I most often come about (and how to recognize that the situation is developing and stop the development); the almost paralyzing startle reaction when an upset occurs; and how to recover from the upset without hitting the ground or breaking the airplane.

We'll make clear up front that upset recovery training and aerobatic flight training are different breeds of cat.

> Aerobatics involves intentionally placing the airplane into conditions not experienced in ordinary flight operations
>
> Upset recovery training focuses on training a pilot how to recognize that the flight attitude and/or airspeed of the aircraft is in the process of exceeding normal bounds; how to handle the intense startle reaction associated with that "OH (insert your favorite Anglo-Saxon monosyllable)" moment; and then how to return the aircraft to where it should be for safe operation.
>
> Aerobatic flight training goes a long way to help a pilot avoid and/or recover from an upset, but it is not, in our opinion, a substitute for dedicated upset recovery training. However, a number of aerobatic courses include upset recovery training.

There are different categories of upsets

VMC LOC-I
Do you fly tailwheel airplanes? Depending on the model, your chances of a runway loss of control event are two or three times greater than when you're flying a nose wheel airplane.

The majority of fatal loss of control crashes are in flight in VMC—usually stalls shortly after takeoff, a go-around or buzz job—followed by stalls in the traffic pattern—upsets into steep banks and on occasion, fully developed spins.

We agree with longtime Idaho-based upset recovery trainer, Rich Stowell, that VMC inflight upset training should emphasize the power, pitch, roll recovery technique—

> **Power** as appropriate, increase if nose high, decrease if nose low;
>
> **Push**, to unload the wing, which reduces the risk of stall if nose high and reduces the load on the airframe if in a diving spiral;
>
> **Roll** to wings level before returning the nose to level flight. **Avoiding a rolling pull-up from a diving spiral** should be emphasized as that imposes the greatest possible stress on the airframe and creates the highest risk of an inflight breakup.

We cannot overemphasize that the natural reaction of a pilot to pull on the yoke/stick during an upset is precisely the wrong thing to do.

Many upsets, stalls and spirals occur because the pilot has been distracted and is looking outside and behind the airplane or into the back seat to deal with a passenger issue, so training should include recognition and recovery when the pilot is looking away from the front of the airplane.

Upset recovery training shines in its effectiveness because the pilot learns how to handle the instinctive startle reaction and start the recovery immediately.

IMC LOC-I

Most inflight loss of control events in instrument meteorological conditions became diving spirals that terminated with ground impact or an inflight breakup.

Most of the inflight breakup events that we reviewed were associated with thunderstorms; however, thunderstorms were not the primary cause of LOC in IMC.

Every year a certain percentage of pilots cannot keep their aircraft upright in IMC with the instruments working properly.

> Causes include the inability to hand-fly in IMC if the autopilot quits working or the pilot can't seem to program it; ill health; incapacitation; lack of or no recent instrument experience; distraction; task saturation; and spatial disorientation/vertigo.

Vacuum pumps fail catastrophically and mean that IMC ops will rely on a pilots partial panel skills unless there's a backup attitude indicator.

Loss of vacuum gyros doomed some pilots—and we fully recognize that trying to fly level in a high-performance aircraft using only the turn coordinator can be extremely difficult and potentially impossible in turbulence.

We observed that good upset training courses included recovery from all of the VMC upsets while under the hood with a full panel as well as partial panel.

In our opinion, the best ways to avoid an IMC upset are to give thunderstorms a wide berth; if instrument rated, take an IPC at least annually; and to install a backup attitude indicating system, even if it is only a tablet computer with an instrument presentation, so that loss of the primary attitude indicator does not result on reliance on a turn coordinator.

RUNWAY LOC (RLOC)

Learning to touch down on one wheel and hold the others off increases crosswind handling skills, and reduces the risk of RLOC.

A hard fact of aeronautical life: The number-one cause of aircraft accidents is runway loss of control—almost always on landing in a crosswind. As one insurance broker (who declined to be identified) said to us: “One of the reasons that insurance rates are so high is the number of bonehead accidents on landing by pilots who refuse to take recurrent training.”

Our review of accident data indicated that the average amount of time since a flight review for accident pilots is 13 months. That’s a powerful indication that taking a flight review annually would effectively reduce a pilot’s risk of rolling an airplane into a ball.

Plus, when it comes to dramatically reducing one’s exposure to RLOC—there is no need to go to a specialized flight school. **Your local certified flight instructor can provide the training you need to top off that skill tank.**

The most prevalent causes of RLOC are carrying too much speed on final and/or failing to use all available aerodynamic control during rollout.

Instructors told us that pilots, as with other humans, often worry about the wrong thing.

> When slowed to 1.3 Vso on approach, they’re concerned that they’ll stall the airplane, when the risk of doing so is tiny compared to the risk faced with managing the extra energy generated by approaching faster than 1.3 Vso.
>
> Stalling on final accounts for only 1 to 2 percent of all accidents. Compare that to the RLOC rate of 40 percent.

Instructors told us that they’ve watched pilots worried about stalling on approach tack on from 10 to 30 knots to their approach speed. We liked national aerobatic champion Patty Wagstaff’s comment—she said that she was “watching people land at warp speed.”

> **Extra speed on final is a big deal because energy is a squared function**—when speed is doubled, energy is quadrupled. That spells serious problems with aircraft control on rollout because the more energy the airplane has when it starts to swerve, the more energy is required to stop the swerve.

That means that the pilot needs to be willing to put the rudder to the stop, and possibly add power, to have the necessary control authority to stop a swerve.

It also means that the aileron input into a crosswind to control the airplane's tendency to drift across the runway and keeping the ailerons deflected during rollout, and often means the difference between routinely turning off onto a taxiway and heading out of control toward the airport fence.

Extra speed on touchdown also means a longer period of time to decelerate to a speed where the aircraft has good rolling control—time that it's exposed to the effects of a crosswind as the flight controls are losing effectiveness.

We have watched, a number of certified flight instructors who go through an **exaggerated crosswind landing exercise** with their clients:

The pilot/student flies final with the flaps up about 15 knots faster than normal approach speed.

He then touches down on the upwind wheel and, with progressively increasing elevator and aileron deflection, holds the downwind wheel and nosegear off of the ground until full control deflection is achieved and the wheels eventually touch.

On calm wind days, the CFIs will have the client carry a little power and after the airplane has rolled briefly on the left main gear, for example, lift off and land on the right main gear, close the throttle and hold the airplane on the right main until it slows enough that it's no longer possible.

Pilots who have received such training have told us that it increased their level of confidence in crosswinds dramatically.

GO AROUND

While we separate loss of control events into inflight versus on the runway, we observed that a number of inflight loss of control accidents are a hybrid of the two—**occurring when the pilot made a go-around after a problem during rollout.**

Many times the airplane's direction had diverged so dramatically that it had either left the runway, or was about to, as the pilot got it into the air. The airplane then hit obstructions or stalled.

Accordingly, we think that the low speed/low energy recovery portion of an **upset recovery training course should include recovery from that condition when the gear and flaps are extended**—while also facing the need to turn to avoid obstructions—as might be happening on a go-around.

Upset Training - What's In A Good Course?

When we concluded our survey of a number of upset recovery training organizations we came to the conclusion that a good syllabus should include the following subjects:

Upset causes and contributing factors—pilot-induced (poor judgment, failure to recognize risk, intentional disregard of FARs and generally accepted safety protocols, inexperience, lack of proficiency, failure to follow standard operating procedures, fatigue, meds and recreational drugs); mechanical and environmental warnings available to a pilot that the aircraft has entered a region of high risk of loss of control.

Aerodynamics/flying the wing—angle of attack and how a wing stalls; the performance envelope; control surface function; aircraft behavior in an uncoordinated stall; recovery from an incipient spin; spin dynamics and recovery; rudder use and effectiveness; aileron use and effectiveness; when and how to put a control surface to the stop; trim fundamentals and use; unloading the wing when in a region of high risk of loss of control; power, push, roll LOC recovery technique.

Example upset events with discussion of how a recovery was successful and why.

> **G-awareness**—effects of g-loads on the airframe as well as the physical effects on the pilot, including reduced ability to comprehend what's going on and solve problems.
>
> **Energy management**—dealing with low-energy flight regimes, especially the potential for stall after takeoff or go-around and high-energy recovery, notably diving spirals.
>
> **Recovery from an upset**—stall, spin and diving spiral emphasizing "power, push, roll."
>
> **System/control malfunctions**—autopilot, automation and instrument malfunctions; jammed controls; and stall warning failure.

Runway loss of control (RLOC)—appropriate approach speeds; energy management; rudder and aileron use on takeoff and landing roll; response to directional excursions/swerves; go-arounds.

Human factors—intensity and effects of the startle response (physiological, psychological and cognitive); situational awareness; information processing; inattention; distraction; fixation; perception illusions; instrument interpretation; fatigue; workload management and crew resource management.

March's Funnies

Troubleshooting Tip

If you keep blowing fuses, just insert these and wherever the fire shoots out is your problem area!

"DON'T TELL MY WIFE" 1960s PIPER AIRCRAFT PA-28 CHEROKEE PROMOTIONAL FILM

https://www.youtube.com/watch?v=9nl6xIOKDuA

Pilot's Tip of the Week

Crosswind Landing Errors

Subscriber question:

"What are the most common mistakes on crosswind landings?" — Kate K.

Wally:

"A common problem I see is poor airspeed control, usually too fast.

Sure it's good to have a little extra airspeed on turbulent days, but too much is as bad as too little. Extra airspeed means you will be hovering over the runway longer waiting for that airspeed to bleed off and that means a longer fight with the wind close to the ground.

Often pilots will try to force the airplane on the ground in this situation and that never works. Use the speed your POH recommends.

Another problem is to stop flying after the airplane touches down. Remember to hold that aileron into the wind after touchdown and increase it as the airplane slows down. If you neutralize the ailerons after touchdown, the upwind wing will come up and the airplane will start to weather vane providing a whole new adventure for you and your passengers.

So watch the speed and fly the airplane all the way to the tie down.

The only way to get good at crosswind landings is to get out there and practice. Get an instructor who is proficient and go out and challenge yourself. If you only fly on calm days, you won't be ready on that day when the wind exceeds the forecast."

Why Are There Mandatory Cloud Clearance Requirements?

By Swayne Martin

Have you ever wondered why we have VFR weather minimums? Imagine you're skimming a cloud bank and another aircraft suddenly flies out of the cloud right in front of you...

Why Cloud Separation Matters

Cloud clearance regulations all come down to ATC coverage, speed, and altitude. **IFR traffic is controlled by ATC, so weather and speed restrictions make sure that IFR and VFR aircraft can see and avoid each other.**

It's an easy temptation for VFR pilots to fly through or around thin cloud layers, and it's rare for pilots to get busted by the FAA for breaking cloud clearance requirements. After all, there's no such thing as sky police on the lookout for you.

But the rules are there for good reason.

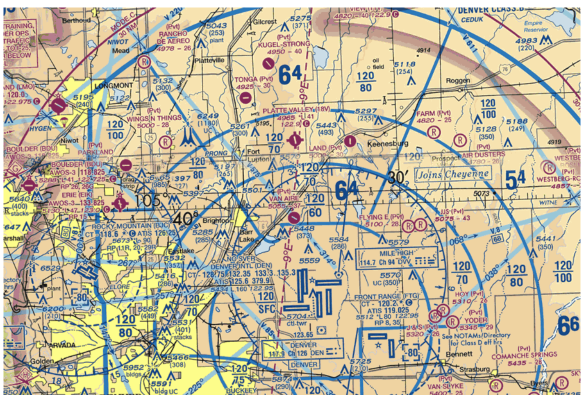
Requirements Vary Across Airspace Boundaries

Class B, C, D, E, and G airspace segments all have different weather minimums in the United States.

In an effort to allow pilots flexibility while flying in different speed, altitude, and ATC environments, there are quite a few regulations you need to memorize.

They're complex segments of airspace, making it difficult to cite every single cloud clearance and visibility requirement from memory.

Class B Airspace Is Surprisingly Lenient



Class B airspace has some of the most strict equipment and communication requirements of any airspace. It surrounds the busiest airports in the country.

But, it's got some of the most relaxed weather minimums. Why? Air Traffic Control.

When you fly into Class B airspace you only need to stay clear of clouds with 3SM of visibility, day or night.

Air Traffic Control makes Class B airspace possible by constantly monitoring and separating each flight in the airspace, VFR or IFR. Approach and departure control transitions aircraft into and out of the airspace, and tower controllers sequence them in for landing and takeoff. Even if you're VFR, each airplane is being controlled and monitored.

Class C, D, E: Relatively Strict Requirements that mimic each other in terms of VFR weather minimums (below 10,000' MSL).

Unlike Class B, they have increased cloud clearance requirements due to a potential lack of ATC radar control.

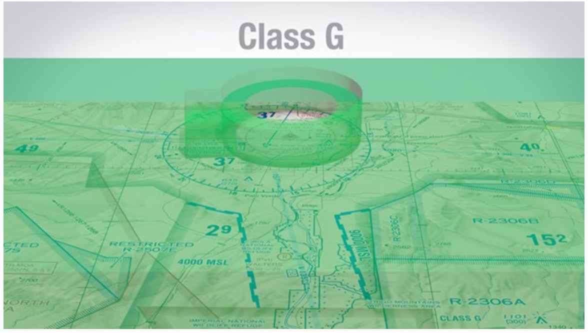
When you fly into a Class C or D airport under VFR, ATC is not required to keep you adequately separated from other VFR aircraft.

Because of this, and the high density of traffic nearby, you need to stay further away from clouds so you can keep clear of traffic conflicts.

In Class E, IFR aircraft are controlled by ATC. This might be a center facility (Air Route Traffic Control Center) or approach/departure facility.

As a VFR aircraft, you're on your own, but IFR aircraft must operate on an ATC clearance. That means the airspace is still controlled. That's why you have the same cloud clearance requirements as Class C or D airspace (below 10,000' MSL).

Class G Is The Most Lenient, And Confusing



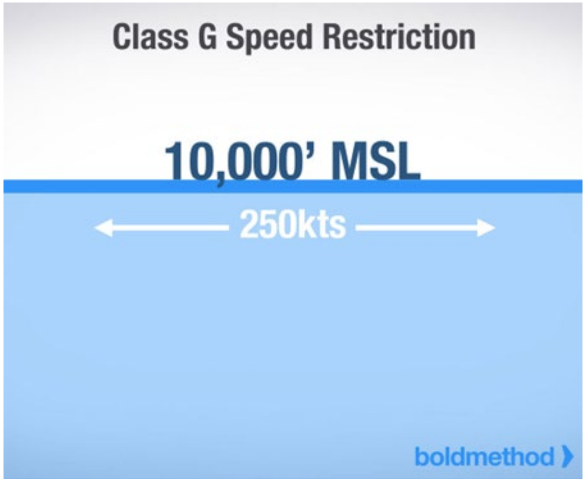
Depending on how high you fly, and the time of day within Class G airspace, your visibility requirement could range anywhere from 1SM to 5SM.

Cloud clearances range from "clear of clouds" to "1SM."

There are 6 sets of Class G weather minimums associated with various altitudes during the day or night.

Need help understanding Class G airspace? Check out our Class G Airspace Article.

High Altitudes Increase Cloud Clearance Requirements



So why is there a difference in weather minimums at different altitudes?

Starting at 10,000' MSL, you can fly faster than 250 knots. Accordingly, you'll need more visibility and distance from the clouds to see and avoid other aircraft.

High speeds increase closure rates, so you'll have less time to react to oncoming traffic.

If you're flying in Class E or G airspace, your visibility requirement above 10,000' MSL is 5SM, day or night. You'll also need to stay 1SM horizontally from, 1,000' above, and 1,000' below clouds.

VFR weather minimums are there for your safety, and the safety of every other pilot and passenger flying. **Staying well clear of clouds will give you the most time to react to a potential traffic conflict.**

Aviation Oddities

The Most Unusual (USA) Aircraft to Ever Take to the Skies

Lockheed XFV Salmon

That's not a rocket you're looking at – it's the Lockheed XFV Salmon, an experimental aircraft designed to takeoff and land vertically. Intended to be flown by the US Navy, the plan was for the fighter to be used in the defense of convoys, but it never left the prototype phase. We'd like to say we can't understand why, but we think the reason is pretty obvious in this instance.

Nicknamed the "pogo stick," this unusual aircraft looks like its pilot didn't know how to properly land it on the runway. While it underwent testing at Edwards Air Force Base, California in 1954 with the use of a temporary non-retractable undercarriage, the XFV Salmon was quickly shelved and the single flying prototype sent to Lakeland Linder International Airport in Florida, where it remains on display

McDonnell XF-85 Goblin

Conceived during WWII by McDonnell Aircraft, the XF-85 Goblin is without a doubt one of the strangest-looking fighters we've ever seen. During the conflict, the US Army Air Forces sent out requests for an aircraft that could deploy from the bomb bay of a Convair B-36 Peacemaker. The result was a parasite fighter that never entered production, let alone service. By the time it took its first flight, it was August 1948 and the war was long over.

When looking at the XF-85, you wouldn't be wrong in assuming it's missing its back half, as the fighter's frame abruptly ends just behind the cockpit. We're honestly having a hard time believing it could even fly properly, so we're not surprised its development was canceled in 1949.

•

Boeing X-32

The newest aircraft on this list, the Boeing X-32 was designed for use by the Joint Strike Fighter (JSF), only to lose out to the Lockheed Martin X-35. Despite taking its first flight in 2000, the demonstrator's origins date back to 1993, when the Defense Advanced Research Projects Agency (DARPA) launched the Common Affordable Lightweight Fighter (CALF) project. A number of concepts were presented, including the X-32.

What makes the aircraft immediately distinguishable (and unusual) is its wide body and small wingspan, making you question how it could possibly remain stable while in the air. Following its being snubbed, the flight tested prototype of the X-32 was moved to the National Museum of the US Air Force at Wright-Patterson Air Force Base, Ohio, where it deteriorated after long-term exposure to the elements.

Thankfully, it has since been restored, meaning visitors can once again catch a glimpse of one of Boeing's most unusual aircrafts.

Editor Contact info is:

Cell: 317-523-3824
Email: n3165e@hotmail.com

Plane Dealing (Want-Ads, Lost & Found & Notices)

Interesting and Useful Websites:

NOTE: You may have to copy and paste the address into your browser if the link doesn't work

If anyone knows of other interesting websites let me know and I will add them to the list

Our Chapter Home Page: **https://chapters.eaa.org/eaa1321**

https://www.facebook.com/groups/822162418913584

http://www.eaa.org/eaa

FAA Safety Team FAASTeam https://www.faasafety.gov/

FAA Safety Briefing Magazine | Federal Aviation Administration

Weather and Flight Planning Sites:

https://www.lmfsweb.afss.com/Website/home#!/

FltPlan.com Free Services

www.avweather.com

www.skyvector.com

www.airnav.com

www.flightaware.com

Miscellaneous Links To Check Out:

http://www.avweb.com/

http://aero-news.net/

http://tailwheelersjournal.com/

www.whywefly.org

www.barnstormers.com

Travel:

http://www.socialflight.com/search.php
www.funplacestofly.com
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www.100dollarhamburger.com
www.airjourney.com