



The Flightline



Volume 48, Issue 14 Newsletter of the Propstoppers RC Club AMA 1042 March 2018



President's Message

Well with back to back storms, the month of March is certainly living up to the old adage "In like a lion." Now let's hope it follows through with the sequel "Out like a lamb." The tree buds are swelling and the daffodil stalks are pushing their way out of the ground. If these signs are to be trusted, spring is not far away.

We have one last shot at the indoor arena Saturday March 10th. Let's try to end the indoor season with a strong attendance showing off all those new skills we perfected this winter.

That Saturday is also the Central Penn Aeromodelers Flea Market in Lebanon, PA. Maybe you will find a great deal on an indoor model to show off that night. If you are planning to go to Lebanon, let other members know if you want to share a ride.

This month's meeting will be full of anticipation for the upcoming outdoor season. Bring your questions and concerns for related issues you feel need attention. If we can get a head start on any problems, we can move forward for a season of smooth flying.

Finally, if you have not paid up your dues by now, definitely do so this month. Due to AMA insurance regulations, members are not permitted to fly at our fields without paid up status.

Dick Seiwel

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Agenda for March 13th Meeting At

Gateway Church Meeting Room
7:00 pm till 8:30

1. Call to Order and Roll Call
2. Approval of minutes
3. Treasurer's Report
4. By Laws Committee Report
5. Old Business
Education/Presentation Committee
6. New Business
7. Show and Tell
8. Adjournment

Minutes of the Propstoppers Model Airplane Club

February 13, 2018 at the Gateway Church meeting room

The meeting was called to order at 7:10 pm.

15 members were present. The minutes of the last meeting were approved, and the treasurer gave his report.

The main topic for discussion was the need to organize the Show-and-Tell section of the meeting. It was decided that presentations should be limited to 10 minutes for members showing new acquisitions, memorabilia, hints and tips, etc. and 20 minutes for educational presentations. Members wishing to participate in Show & Tell should call Chuck Kime for scheduling.

Show-and-Tell

Eric Hofberg showed an OK CO2 motor that uses soda siphon carbon dioxide cartridges as its power source. Unlike later motors of this type where the cartridge was used to fill a lightweight tank the rather heavy cartridge was flown, resulting in a heavy model. But, it was possible to get reasonable results. He also showed small plastic pipettes that were useful for dispensing small drops of C/A glue, and electrical tie wraps that could be put on the handles of craft knives to prevent them rolling off the work bench and stabbing your foot!

Mike Black showed his repair techniques for repairing a badly damaged Thunder Tiger Extra 300.

Propstoppers RC Club of Delaware County, Pennsylvania. Club Officers

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Propstoppers Web Site; www.propstoppers.org
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2018 Indoor Flying at the Brookhaven Gym

Last Indoor of the season

March 10:

6:30-9:00 pm.

Flying after Tuesday Breakfast 10.00am

Membership Renewal For 2018

Membership renewal for 2018 is now required. You can renew by mail or at the club meeting in December or January.

Don't lose your club privileges!

Bring cash or check and your AMA card.

Dues are \$60.

To renew by mail, please send a check made out to the *Propstoppers* to:

**Ray Wopatek
1004 Green Lane
Secane, PA. 9018**

Please enclose a **copy** of your current
A. M. A. Membership card,

**And Please, Please enclose a
Stamped self- addressed envelope.**

Ray Wopatek Membership Chairman

Calendar of Events

Club Meetings

Monthly Meetings

Second Tuesday of the month.

Gateway Community Church at the Christian Academy. Doors open at 7:00

Gateway Church Meeting Room

Tuesday Breakfast Meeting

Tom Jones Restaurant on Edgemont Avenue in

Brookhaven. 9 till 10 am. Just

show up.

Flying after in the summer at CA or Elwyn Field 10 am. Weather permitting.

Indoors at the Brookhaven Gym in winter

10:00-11:00 (subject to availability of the gym).

Regular Club Flying

At Old Christian Academy Field; Electric Only

Monday through Friday after school till dusk

Saturday 10 am till dusk

Sunday, after Church; 12 pm till dusk

At Elwyn Field; Gas or Electric

Monday through Saturday 8 am till dusk

Sunday 12 pm till dusk

INDOOR Flying, see attached dates.

Special Club Flying

Saturday mornings 10 am

Wednesday Helicopter evening in summer

Thursday evenings in the summer

Tuesday mornings 10 am weather permitting after breakfast.

Check our Yahoo Group for announcements;

<http://groups.yahoo.com/group/propstoppers/>

Beginners

Beginners using due caution and respecting club rules may fly Apprentice or similar models without instructors at Christian Academy Field.

The club also provides the AMA Introductory Pilot Program for beginners without AMA insurance.

Drew Resweber

Where is he now?



If you take a look back at your June 2008 Flightline, you will see a couple photos of then junior member Drew Resweber learning the basics on Dave Harding's trusty Miss America.

Well, Drew was hooked pretty badly during his time with Propstoppers and credits Dave Harding and the rest of the club for giving him the means and incentive to pursue a career in aviation.





Ten years later, he is a graduate of the US Air Force Academy and is now starting jet fighter training.

Recently, now 2d Lt Drew Resweber, USAF, was back in contact with Dave to let us know how he is doing and to express his appreciation to the club.

Here is an excerpt from his message to Dave:

“I hope all is well with you and your family and you're surviving another east coast winter! I just wanted to shoot you a quick email to check-in and touch base!

I am still stationed at Sheppard AFB in Wichita Falls, TX attending Euro-NATO Joint Jet Pilot Training (ENJJPT) as part of class 19-02. My Class has 20 Americans, 2 Danish, and 6 Italian Air Force officers receiving pilot training before earning their wings and heading off to their respective nation's air force... they are all very solid dudes and are a blast to hang out with! After 1 month of academics, we started flying the T-6A Texan II for that 6-month segment of the program before moving onto the T-38 Talon for the final 6 months of pilot training. All of the training is heavily augmented with simulators and academics to provide students with as much opportunity to learn instruments, navigation, formation, and other essential aviation skills required of any NATO pilot. The ENJJPT program is heavily focused on producing combat-ready fighter pilots for the NATO alliance which is evident in the syllabus which includes not just basic flying and instrument work,

but also formation flying and low-level training.

Attached is a photo we took the other day in front of a T-6 with our standard flight gear on!

I hope all is well with you and your family and you are getting the opportunity to build, fly, and complete with the club. Thanks for all the help and guidance you provided, especially in my younger days when I was just getting into the aviation world. I owe a ton to the Propstoppers for helping foster my passion for aviation and getting me pointed in the right direction to become a pilot!

Cheers and Fly Safe,

2d Lt Drew Resweber, USAF.”



US Air Force T-6A Texan II



US Air Force T-38 Talon

Stratolaunch, World's largest-ever airplane does first runway roll



WASHINGTON — the giant aircraft being developed by Stratolaunch as part of an air-launch system is one step closer to its first flight after a new series of taxi tests.

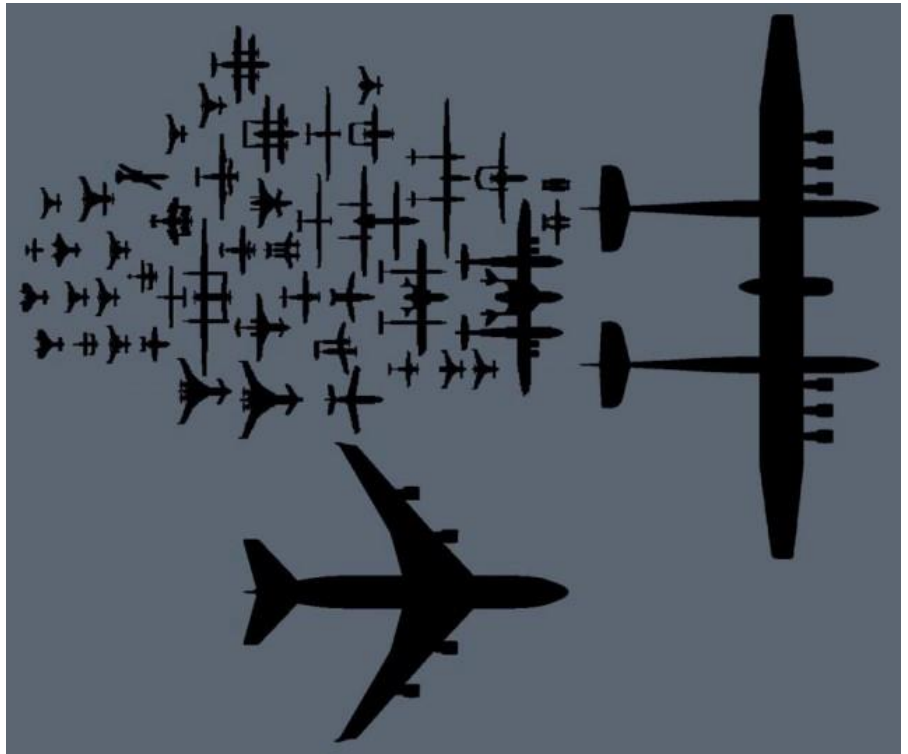
The company said Feb. 26 that it performed a series of medium-speed taxi tests of its aircraft Feb. 24 and 25 at the Mojave Air and Space Port in California. The aircraft reach a top speed of 74 kilometers per hour in the tests.

“The primary purpose of the activity was to evaluate updates made to the steering and primary braking systems. We are excited to report all objectives of this test were achieved,” company spokesperson Alex Moji said in a Feb. 26 email. “The data collected will be used to evaluate and update our flight simulator for crew training.”



Stratolaunch, funded by billionaire Paul Allen, developed the plane as an air-launch platform. The company now plans to initially use the aircraft to carry Orbital ATK's Pegasus XL rocket, with the ability to host three such rockets on a single flight. That approach, the company argues, could offer benefits particular to national security applications by being able to launch a constellation of small satellites into different orbits on the same flight.

The giant aircraft — the largest in the world by wingspan, at more than 117 meters — has remained the center of attention, though, attracting visits by dignitaries such as Vice President Mike Pence, who stopped at Stratolaunch during a tour of Mojave Air and Space Port in California in October. That visit including a photo op standing on top of the aircraft's wing.



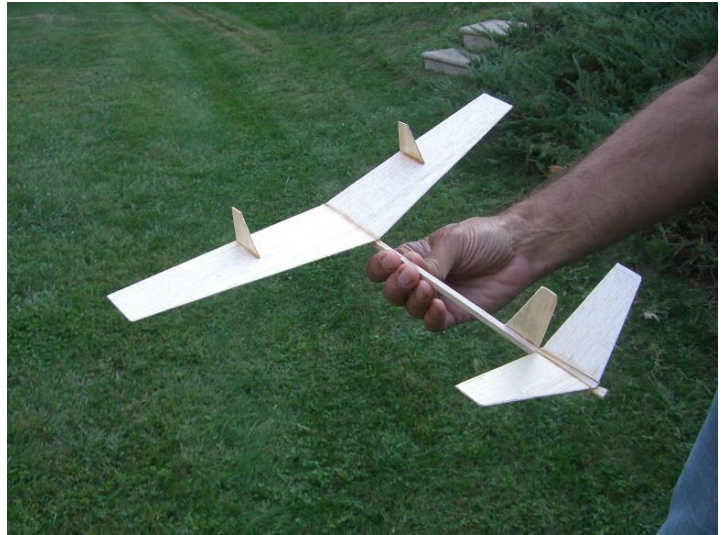
Click the image above for link to video of the taxi testing.

What Are Canards, And Why Don't More Aircraft Have Them?

By Dave Harding

You've probably seen a canard - the small, forward wing you see on a Eurofighter Typhoon or the Rutan Long-EZ.

Dave Harding and Dick Bartkowski were known to experiment with the design. Dick wanted to compete in SAM with an unusual design and selected a canard.



Initial flight tests were a handful and Dick decided to build a hand launched glider to explore how you trim one of these things so he could apply it to the competition airplane. Dave went one further and built a powered RC plane using an existing balsa wing and easy to build fuselage and foreplane.

Now canards have the center of gravity somewhere between the two lifting surfaces, the reason for which I will explain later. The motor was mounted on the top of the fin.

The aerodynamic moments were calculated, then the stability requirement added to establish the necessary CG location. You can just see the CG and Neutral Point marked on the top of the fuselage. The thing flew beautifully validating the analysis and findings from Dick's HLG.

Now for the hard part; we are not accustomed to flying canards and it was real easy to think you were going in the opposite direction! On the final occasion when I made this mistake it resulted in a near vertical dive and in the recovering pull up maneuver the forward surface departed the airplane! It was held on by a few small rubber bands as there was no room for more!

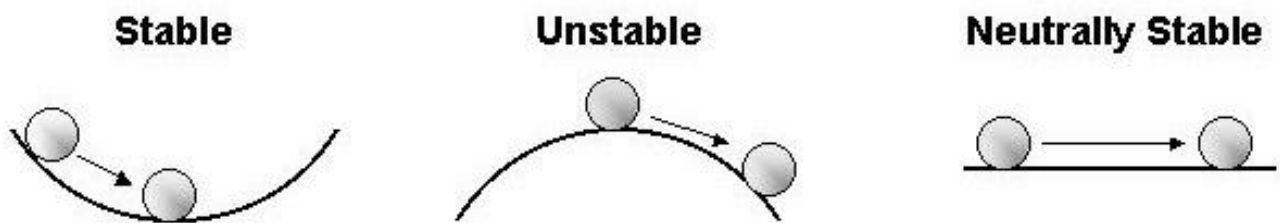
But all this leads us to question why there are not more canards in the aviation firmament?

The basic reason is they are, all other things being equal, inefficient!

For most real airplanes we see in the skies, airliners, general aviation and cargo planes, efficiency is KING, less efficiency means bigger engines and more fuel burn. This in turn, means less payload. So, operating costs go up, shared by fewer people or less cargo.

There are other kinds of airplanes for which other aspects are more important, such as maneuverability, performance etc. This includes most of our sport RC models, which are vastly overpowered, and where less efficiency just means shorter flights.

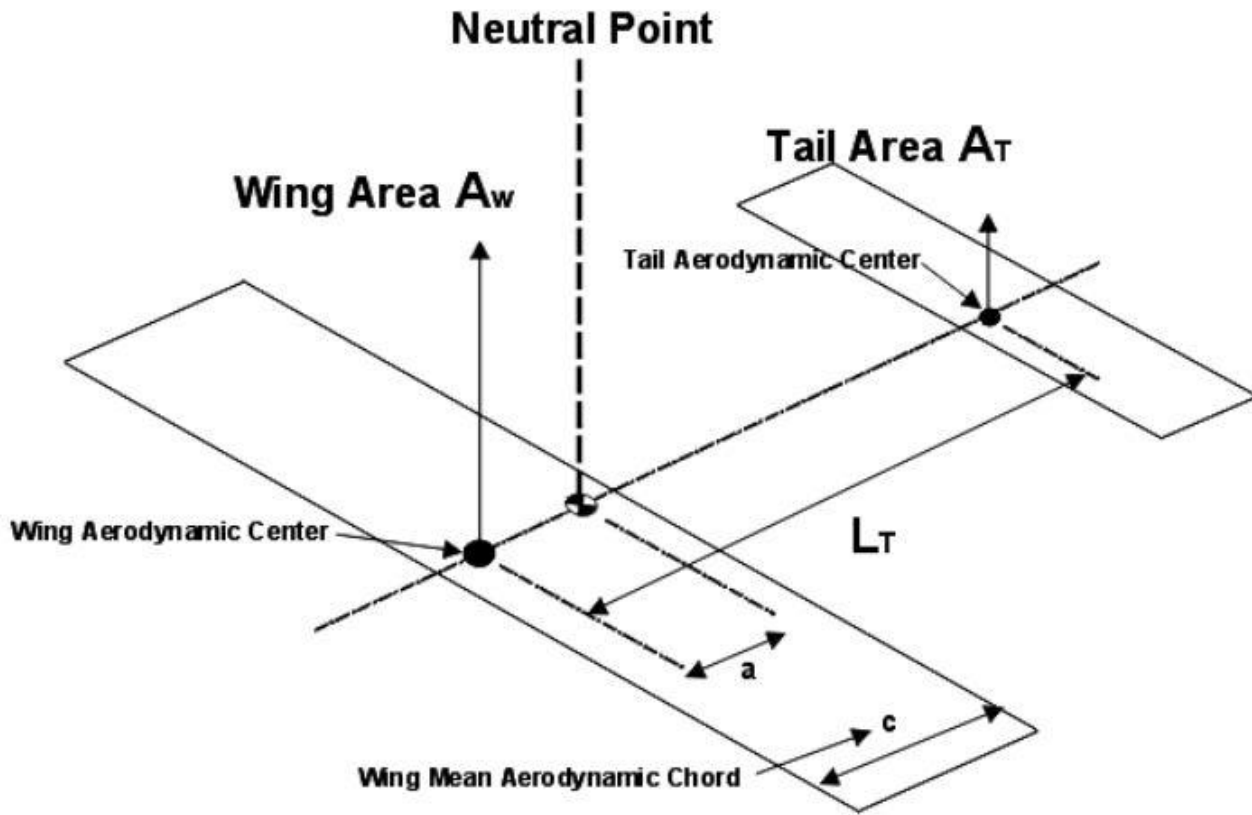
So let's first examine why canards are less efficient. It all boils down to what is required for the airplane to be longitudinally stable.



Very simply, but conceptually valid, imagine a two surface airplane with the surfaces spread longitudinally. There is a point between them where the aerodynamic forces act when the plane is pitched up or down. This is called the Neutral Point, NP.

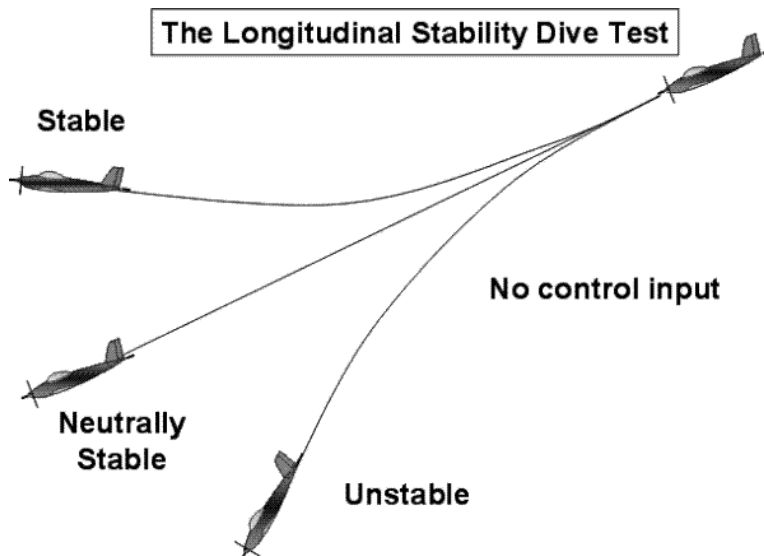
We can estimate it crudely by imagining the two surfaces cut from the same piece of cardboard glued to a stick (fuselage). Now imagine you hang this from a string tied to the stick. The point

where the forward and aft surfaces become level (the forward balances the aft) is the NP. Now to make this more accurate you would suspend each surface at its quarter chord point because that is the center of pressure for most wing/airfoil combinations.



So now we have an NP we must decide where the CG should be to make the airplane stable. Stable means when flying level when it is upset it will return to this stable flight condition.

The Glider Guilders use the dive test to refine the CG location, but more on this later.

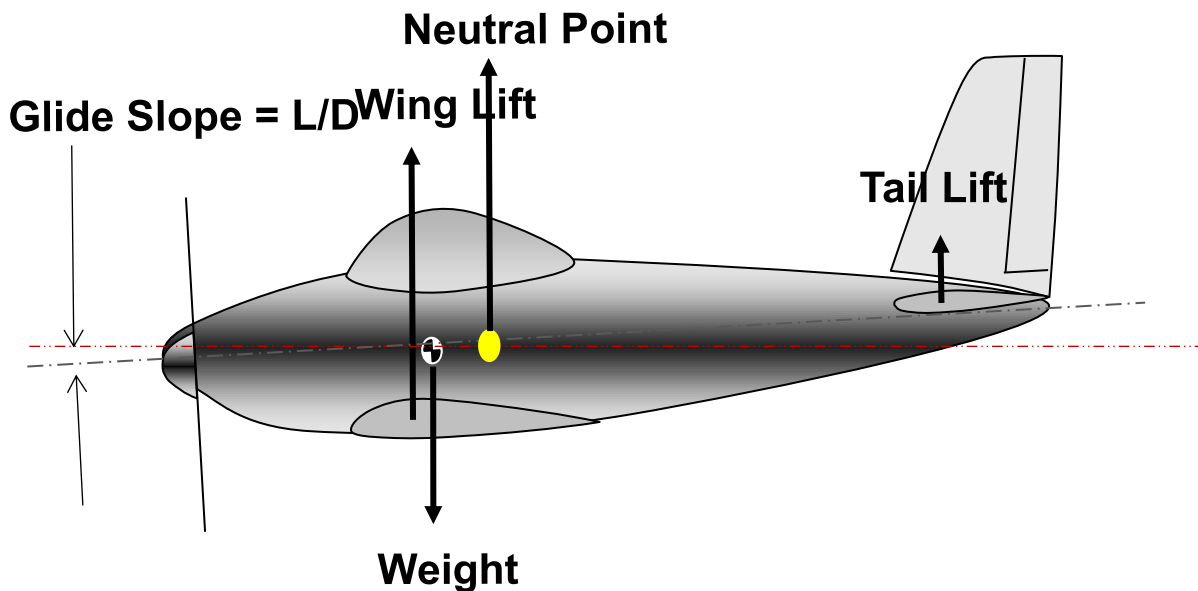
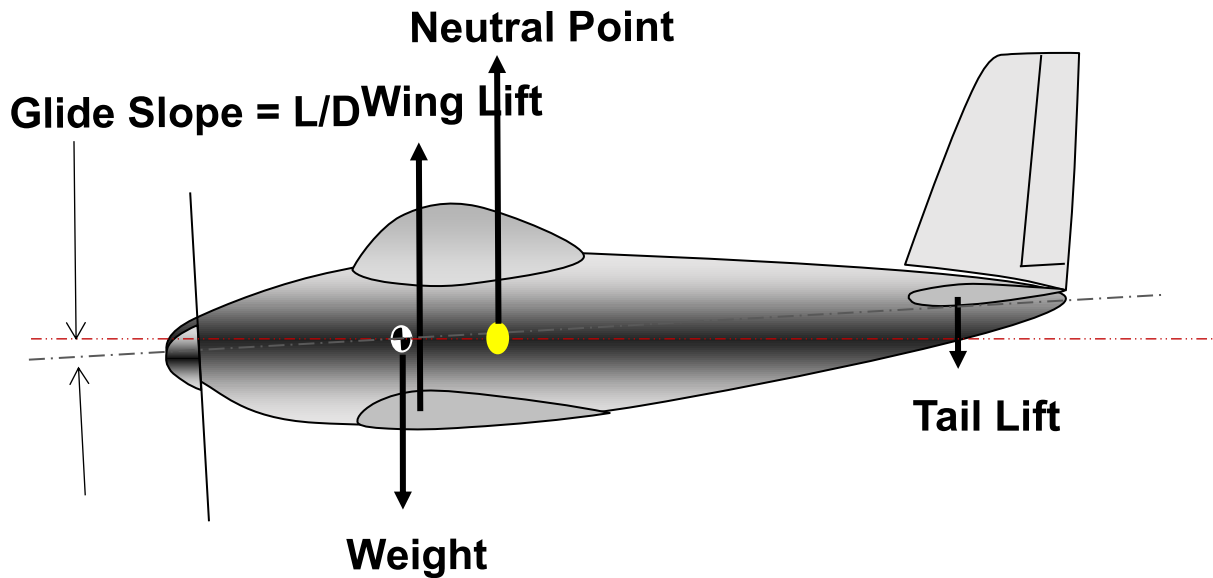


If we put the CG on the NP we would balance the forces Lift equals weight with no nose up nor down moments. But if it is upset it will not return to the stable condition.

Now if we put the CG in front of the NP the airplane will simply nose over into a dive. So we add just enough up trim from up elevator, or a slight nose down incidence change to the aft surface, to bring the pitching moments to zero.

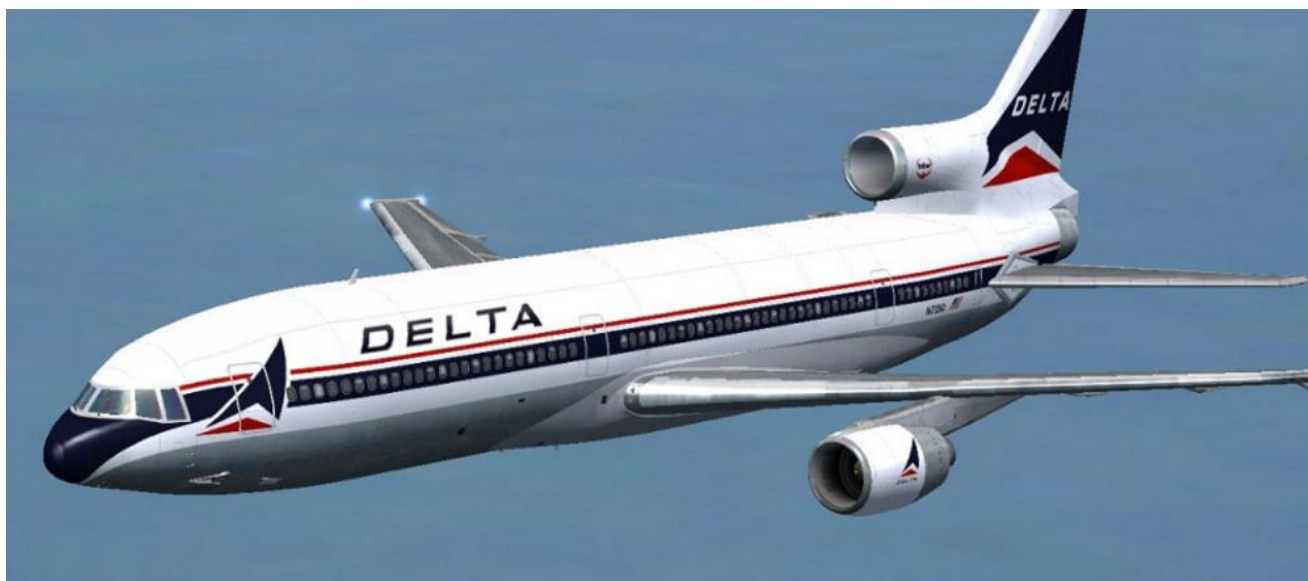
Now if this airplane is upset into a dive the speed increases, but the weight doesn't. The increase in speed results in an increase in the nose up trim moment causing the airplane to pitch up and the speed reduce. If you got it right it will return to the original stable level flight.

But if you put the CG behind the NP you would need a nose down trim moment, and when the speed increased the nose down moment would increase steepening the dive more and more; an unstable condition.



So, ALL STABLE AIRPLANES MUST HAVE THE CG AHEAD OF THE NP!

Note; if the design allows for the CG to move aft such that the tail is lifting and the airplane is still stable it can be aerodynamically more efficient. In the 1970s Lockheed built the L-1011 tri motor jet airliner.



They put a fuel tank in the horizontal tail. After takeoff they would pump fuel into the tail tank to move the CG aft and make a lifting tail for efficient cruise. On approach to landing they pumped the fuel back to the forward tanks to increase the stability margin for the low altitude weather and landing condition.

So now let's look at this two surface plane with the small surface ahead of the big one; a canard!

In this case the trim moment once you set up the foreplane for most efficient angle of attack it means that the aft surface, the wing, is flying at a lower angle of attack, below the most efficient point.

Worse, because the aft surface is flying in the wake of the fore surface it is climbing up hill; the wake of the foreplane produces a downwash which looks like a hill for the aft surface. Consequently the bigger aft surface suffers a double hit.

But wait, some say we don't build canards because the fore surface would stall first! Well, yes, but with a conventional plane the wing stalls first. Must be more to it; well, if the fore surface is also the primary means of pitch control you would lose that capability when it stalls, but you could mix the aft surface ailerons to act as elevons, although a fully stalled fore surface might be hard to overcome.

Still, the primary reasons we don't use canards is a significant reduction in aerodynamic efficiency with few/no advantages for most airplanes.

So why do we see canard surfaces on many of today's jet fighters? I believe there are two reasons, first they are almost all supersonic and designing for this regime leads you to different wing designs, mostly with extreme sweep and many with delta wings. Secondly, they also

emphasize extreme maneuverability and it could be that the small canard is a more efficient way of generating the pitch up moment than the elevons of a delta wing.



Finally, for that application one would expect the flight controls be fully digital with all the bells and whistles. This would allow them to use canards that result in unstable passive longitudinal stability and counter it with active control of that surface to regain the necessary apparent stability.

Imagine balancing a yardstick on your finger. Stand completely still and it topples every time. But now allow you to move your finger and you can balance it forever. This is how the digital controls add stability in these conditions.

Why else would you build a canard? Well I spent a lot of time with Burt Rutan but never got the courage to ask him why he does it. In the case of the VariEze and Long Eze, it could be the vision from a canard cockpit in an airplane to have fun. Certainly efficiency is of little concern for such an airplane. But only Burt knows for sure.



But, as I said earlier our sport RC airplanes are overpowered and don't much care about efficiency, all you need is a stable airplane with plenty of power.

Just for fun, here is a link to video of what Flitetest is doing with a speedy little canard:
<https://www.youtube.com/watch?v=f4sz0BFuID4>

I rest my case.
Dave