

SAM SAYS



November 2011

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salinasareamodelers.org

P. SALINAS AREA MODELERS
 Q. P.O. Box 1225
 Salinas, CA 93902-1225
 AMA CHARTER NO. 1554
 IMAA GS SQD. CHAPTER 147

Last RudderGate of 2011 — October 29th

2012 Officer Election Coming Up, Proposed 2012 Calendar

NOVEMBER PROGRAM
 Alan Brown will be discussing his article on Dihedral and Sweepback (see Pages 5-7)

NOVEMBER NEWS

NOMINATIONS FOR OFFICERS AND BOARD

Nominations for 2012 officers and board members will be entertained at the November club meeting. If you plan to nominate somebody, please check to confirm their willingness first.

DON'T MISS ALAN BROWN'S LECTURE

Our resident aerodynamicist, Alan Brown, will be talking about dihedral and wing sweep and their effects on stability at the club meeting. Read his article on Pages 5-7 before the meeting!

2012 SAM CALENDAR

The calendar of events for next year will be firmed up and approved at the November club meeting. If you have events to propose be sure to come to the meeting. John Midgorden is taking orders for his annually produced of the SAM calendar that includes personal photos and many photos of 2011 SAM activities.

THE WONDERFUL SUPPORT OF ROBBIN'S HOBBIES

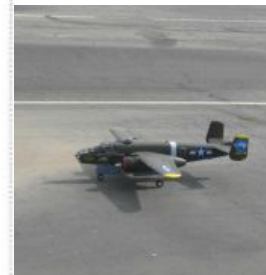
Thanks to Jack Tossman's relationship with his favorite hobby shop in Glendale, CA our electric events have been wonderfully supported by Robbin's Hobbies. See Page 4.



Electric Models with Sponsor Signs at the October Volt Fly

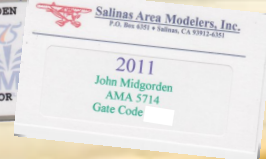
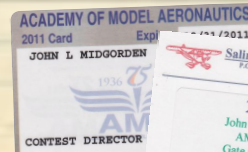


Cub and Shoestring at October Volt Fly



Howard Power's B-25

The November Club Meeting at the Landing Zone November 2nd



President Says . . .

Boy how the months fly by. It is hard for me to believe that it is so late in the year already. This month I want to talk about safety. This is such a great and fun hobby, but like many things in life, we can forget and become complacent with safety issues. As fun as our hobby is, it can be dangerous. Thankfully we have not had many issues at our field. However we have all seen members who do things like stand in plane of with a running prop. All of us have experienced a crash or two, it is an unfortunate part of the hobby. These can be caused by many issues. Not doing a safety check on our planes before we start flying for instance. Checking that our radio's are set to the correct plane, that the control surfaces are going the correct way. Are the throws set correctly? Fuel?

How many times have you had a plane talking to you, telling you that it is not ready to fly (having problems one after the other) and you take it up anyways, because you want to fly. Another BIG reason is when we get excited and get too much plane for our flying skills when we should be flying something a bit tamer that a fully aerobatic speed demon with that DA 100 stuffed into a 40 size trainer. Well ...ok maybe that is a exaggeration but you get the idea.

So maybe sometimes it is a good idea to stop what you are doing, take a moment and think safety, for your health as well as others. Actually listen to your plane when it is talking, listen to your own feelings. Chances are they are correct.

DA100 in a 40 size trainer.....hmmmm.....

*Chris Meharg
President*

NOVEMBER BOARD MEETING

The next SAM Board Meeting will be held at 7:00 P.M. on November 1st at the home of Dennis Stanley. Board meetings are open to all SAM members. Dennis' address is 22090 Berry Drive in Salinas. Phone number (831) 455-2090.

Pursuant to the requirements of the Salinas Area Modeler's Bylaws regarding GRIEVANCE PROCEDURE under Article XIV beginning on Page 9 under SECOND VIOLATION, the following letter is published in the Club newsletter.



SALINAS AREA MODELERS, INC.

Serving the Central Coast of California Since 1976

P. O. Box 1225 Salinas, California 93902-1225 www.salinasareamodelers.org

Mr. Jurgens,

I regret to inform you that according to Article 14, number 2 c (3) of the Constitution and Bylaws of the Salinas Area Modelers. **Your flying privileges, effective immediately, are here by suspended for a total of thirty days, October 4th through November 2nd.** Also in accordance with article 14 section c(3) this notice "**shall be issued and a copy published in the club newsletter.**"

Article 14, 2 (b) requires on the first incident you be talked to and be issued a "verbal reprimand". In May of 2011 the board decided to do so, you may recall being talked to by Dennis Stanley and Bob Mc Gregor.

To date we have received two separate written grievances. In accordance with Article 14 section (c)1, from Chris Johnson and Rob Ellis. Both complaining of safety issues with you flying over the pits, crashing into the parking lot, frequently losing control of your plane. These are very serious safety issues putting people, property as well as the Club itself at risk.

However if you so choose, you may continue to fly during this 30 day suspension as long as you utilize a buddy box system with you on the slave radio. The Board Strongly urges you to utilize this time to better your flying skills as any further safety related incidences may result in a permanent suspension.

Christopher Meharg
President
Salinas area Modelers

2012 OFFICERS AND BOARD MEMBER NOMINATIONS

At the November Club meeting nominations will be accepted for 2012 Officers and Board members. The following names have presently accepted a nomination.

President	Chris Meharg
Vice-President	Walter McCommons
Secretary	John Midgorden
Treasurer	Bob McGregor
Board Members	Randy Bonetti, Pat O'Keefe Dennis Stanley



MINUTES OF THE OCTOBER SAM CLUB MEETING

The October 7th SAM member meeting was called to order by President Chris Meharg at 7:00 P.M. at the Landing Zone Restaurant, located in the Salinas Municipal airport terminal building.

Board members present for the meeting were Chris Meharg, John Midgorden, Bob McGregor, Walt McCommons, Dennis Stanley.

Members present: were Dick Moeller, Jack Jella, Gary Mallett, Ben Gacayan, Robert Meharg, Rod White, Bill Hurst, Pat O'Keefe, Gary Sobak, and Rob Ellis.

Treasurer Bob McGregor gave a financial report regarding balances in the club's checking and savings account. He also reported the membership count at 87.

Old Business

- Safety Issue:** President Meharg read a letter that is being sent to Dick Jurgens regarding his unsafe flying (see copy on page).
- New Container:** The new container is still awaiting work needed to install the security grate, vent turban and interior painting.
- Parking Bumpers:** Board is looking into replacing the deteriorating logs used as parking bumpers.
- Speed Limit Sign:** Chris is looking into purchasing a yellow diamond sign for the entrance road speed limit.
- Membership Applications:** Midgorden has been working on new club application forms for the new year, reflecting the change in the dues amount. Chris explained that the Board has decided to change the youth dues to zero if they are a family member of an active adult member.

New Business

- Officers for 2012:** Chris explained that nominations will be in order for officers and board members at the November club meeting.
- Xmas Banquet:** The price for the 2012 banquet will be the same as last year, \$25. If the Landing Zone needs to charge us more this ear the Club will subsidize up to an additional \$5. Helen and James Klimas are working on cost and menu.
- Float Fly this weekend:** This is the last float fly of the season. The gate lock at the lake will have the SAM gate combination. Be sure to lock the gate after entering to keep unwanted spectators out.
- Electric Event:** Jack Tossman has been working to secure sponsors for the Oct 13th Electric Event.
- Scale Masters:** Chris announced that the Scale Masters is being held at the Fresno RC Club this coming weekend.

There were no show and tell or program this month.

Respectfully submitted

John Midgorden, Secretary

CALENDAR ORDERS

Midgorden is now taking orders for his 2012 SAM Calendar which will include the SAM events and many photos of last years activities. Plus, if you order one, he will include your photo on your birthday. Please phone (831-240-8988) or email John your order (jomidgorden@mc.com). **Orders due by November 15th!**

2012 CALENDAR (PROPOSED)

January

2	Board Mtg.	Location to be announced
4	Club Meeting	Salinas Airport
30	Board Mtg.	Location to be announced

February

1	Club Meeting	Salinas Airport
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March

5	Board Mtg.	Location to be announced
7	Club Meeting	Salinas Airport
17	Slope Soaring	Seaside Beach
24	Field Work Day	SAM Field

April

2	Board Mtg.	Location to be announced
4	Club Meeting	Salinas Airport
7-8	IMAC Contest	SAM Field
13-15	Float Fly	Lake San Antonio
27-29	Francis Memorial IMAA	SAM Field
30	Board Mtg.	Location to be announced

May

2	Club Meeting	Salinas Airport
18-20	Float Fly	Lake San Antonio
26	Ruddergate	SAM Field

June

2	Glider Contest	SAM Field
4	Board Mtg.	Location to be announced
6	Club Meeting	Salinas Airport
16	Field Work Day	SAM Field
30	Ruddergate	SAM Field

July

2	Board Mtg.	Location to be announced
5	Club Meeting	Salinas Airport
7	Glider Contest	SAM Field
14	Memorial Fun Fly	SAM Field
28	Ruddergate	SAM Field
30	Board Mtg.	Location to be announced

August

1	Club Meeting	Salinas Airport
4	Glider Contest	SAM Field
24-26	Scale Fun Fly	SAM Field

September

1	Glider Contest	SAM Field
3	Board Mtg.	Location to be announced
3	Labor Day Fly In	SAM Field
5	Club Meeting	Salinas Airport
14-16	Float Fly	Lake San Antonio
22	Field Work Day	SAM Field
29	Ruddergate	SAM Field

October

1	Board Mtg.	Location to be announced
3	Club Meeting	Salinas Airport
6	Electric Fun Fly	SAM Field
12-14	Float Fly	Lake San Antonio
27	Ruddergate	SAM Field

November

8	Board Mtg.	Location to be announced
7	Board/Club Meeting	Salinas Airport

December

1	Toys for Tots Fun Fly	SAM Field
1	Annual Banquet	Landing Zone



ANNUAL "VOLTS FLY" ELECTRIC EVENT



A BIG THANK YOU TO ROBBIN'S HOBBIES OF GLENDALE, CA

I have been going to Robin's since 1976. Robin Sr., the long-time owner, has been modeling since the 1950's. He and his late wife Marianne would travel to model events in several states. His oldest son, Robin Jr., now runs the store, but the same great "Karma" is still there! If you are in the Los Angeles area the shop is just about a mile North of Highway 5, between Western and Alameda in Glendale on Glenoaks Blvd. The ceiling is filled with many planes and choppers looking for new homes. They are stocked with most everything you are looking for. Robin has been sending some very nice goodies for our electric event. Over the past several years, he has sent up several hundreds of dollars worth of planes, flight sim, and stuff.. They are at 1844 W. Glenoaks Blvd, Glendale, CA 91201 (phone 818-240-2093). Be sure to mention you are a SAM member and receive a 10% discount.

Jack Tossman (cub reporter)



Left: Robbin's Hobbies with all the "stuff" you need.

Right: Robin Sr. in his office.

Your editor will have more photos of some big engines they have for sale next month.





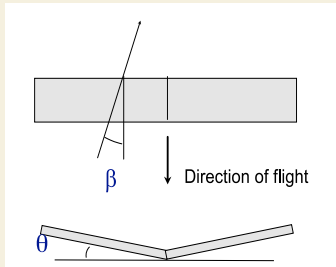
DIHEDRAL, SWEEPBACK AND SUCH

BY ALAN BROWN

How do dihedral and sweepback affect lateral stability and are they sort of interchangeable in effect? Let's start with

dihedral.

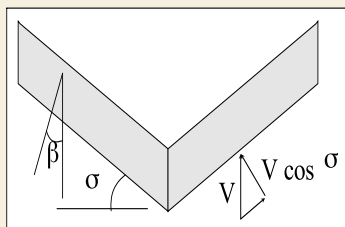
When a wing with a dihedral angle θ encounters an angle of yaw β then a streamline will walk across the wing in the direction shown. If you look at the wing from the front, the flow hits the forward wing leading edge



higher up relative to the trailing edge and so the angle of attack increases by the product of the tangents of θ and β . For example, if the dihedral angle and the yaw angle were each 10° , then the angle of attack on the leading wing would increase by 1.8° and that on the trailing wing would drop by the same amount.

If the airplane were flying at an angle of attack of 5° , then with 10° of yaw, one wing would increase its angle of attack to 6.8° and the other would drop to 3.2° . This produces a substantial rolling moment which results in a gravitational imbalance, and the airplane starts to roll in the other direction. Statically very stable. If the fin is too big combined with substantial dihedral, then the airplane will overshoot and it could be dynamically unstable and go into a Dutch Roll mode, otherwise known as wallowing. Note that the angular change is independent of the angle of attack at which the airplane is flying, so the relative effect of the dihedral is greater at low angles of attack (high speeds) than at high angles. If the angle of attack is close to the stall value, then the increase in effective angle could stall the leading wing, reducing its lift, and causing it to diverge in roll and yaw (otherwise known as a dramatic roll into the ground on take off or landing).

Now to **sweepback**. Here, the way to look at how the wing lifts is to split the velocity coming toward the wing into two components, one at right angles to the wing and the other parallel to it. For simplicity, we'll assume that the wing is not tapered. Only that velocity component at right angles to the wing contributes lift. The flow parallel to it only contributes drag. If the sweepback angle is σ , then the velocity component at right angles to the wing is $V \cos \sigma$ and the lift on the wing drops because it is proportional to the square of the velocity. In this case the



effective velocity has dropped by cosine σ and so the lift drops by $(\cos \sigma)^2$. As the drag hasn't changed noticeably, the lift/drag ratio of the airplane goes down, to a first approximation, by a factor of $(\cos \sigma)^2$. If the sweepback angle is 30° , then the lift drops by 25%; if it is 45° , the lift drops by 50%. Those of you who have observed the sink rate of typical jet fighter models will know what I mean!



However, I'm straying from the lateral stability story. Now it becomes fairly obvious that if the airplane is yawing, then the wing with the lesser sweep will generate more lift than the one on the other side, proportional to $\cos(\sigma - \beta)^2 / \cos(\sigma + \beta)^2$. For our example of 30° sweep combined with 10° yaw, this ratio will be about 1.5. This compares with our 10° dihedral example of $6.8 / 3.2$, or 2.125. Note however that for the swept back wing case, the ratio is independent of lift coefficient and therefore also of speed, while dihedral is more effective at lower lift coefficients and therefore at higher speeds. Also, as yaw of a swept back wing does not increase the effective angle of attack, it cannot induce instability owing to stalling the leading wing in the yawed configuration. A common rule of thumb in the full-scale airplane business is that 10° of sweep provides about 1° of effective dihedral, although this is very lift-coefficient and configuration dependent.

Now we'll talk about the effects of induced drag and the vertical position of the wing.

We have looked at the effects of dihedral and sweepback on roll/yaw coupling. Now we'll add the effects of induced drag into the roll/yaw coupling arithmetic. What I said about yaw on a dihedralled wing causing an opposing rolling moment is correct. However, in addition, when the local angle of incidence is increased, the drag associated with lift, induced drag, also increases and that also causes a stabilizing yawing moment. The resultant maneuver then depends on the airplane's aspect ratio, because induced drag is inversely proportional to aspect ratio. (Halve the aspect ratio, double the induced drag). For example, if a high aspect ratio dihedralled airplane like a competition sailplane encounters a side wind or yaw, it will tend to roll away from the yaw and after getting into a tilted attitude will turn into the cross wind, thus reducing the yaw angle. If a very low aspect ratio airplane with dihedral yaws, it will immediately correct the yaw because of the high drag force and probably will not see as much roll angle. So the correcting maneuver depends on the aspect ratio of the airplane. I would be interested to find out

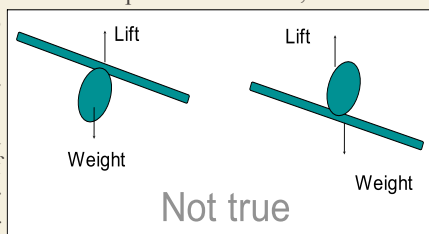
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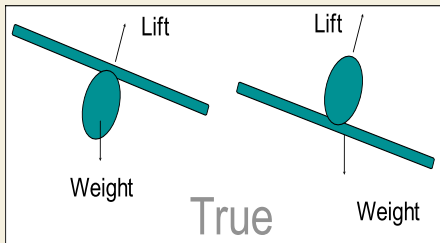
whether any of you have had experiences which confirm or deny these reactions.

Now to the effect of wing position, high, low or mid on roll stability and roll/yaw coupling. First we need to understand what we mean by stability. In airplane terms, if the plane changes its pitch, yaw or roll angle, it will be stable if it tends to return to the original angle, and unstable if it diverges away from that angle. In pure pitch, we can imagine a change in angle without affecting other angles on the airplane. The horizontal tail will tend to bring the airplane back to its original angle, just like the feathers on a dart. If the airplane yaws, then the vertical tail has the same effect, although, as we saw earlier, roll may also be induced, depending on the airplane's geometry.

However, the situation in roll is quite different. If the airplane changes its roll angle for any reason (a gust, for example), then there is no reason for the airplane to immediately roll back to its wings-horizontal attitude. This is contrary to the common belief that a high wing is more stable because of the so-called pendulum effect, as shown in



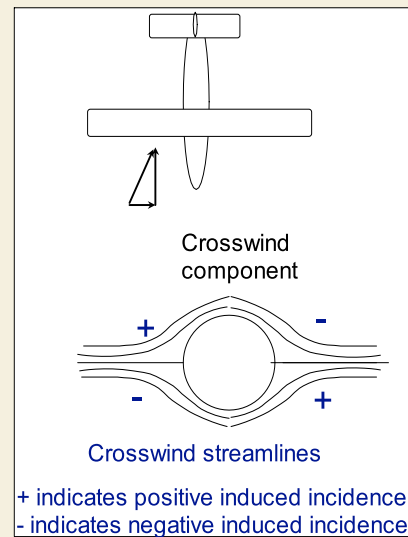
the first figure. As the airplane rolls, the weight of a high wing airplane, being suspended below the center of lift, would appear to cause a rolling moment which will reduce the roll angle. Conversely, for a low wing airplane, the weight is above the lift and the roll angle will diverge unstably. However, the real vector directions are as shown in the next figure.



The lift always acts at right angles to the wing, and so its vector always passes through the centerline of the aircraft, and therefore through the c.g. I am assuming we have a symmetrical airplane in front view. But even if we don't, the lift vector does not change its relative position as the airplane banks. So there is no resultant moment whether the wing is high or low. This is weird, because we all know that a high wing airplane needs less dihedral than a low wing airplane.

O.K. here's the explanation. Look at the previous illustration. When the airplane rolls, there is a sideways component of the weight which moves the airplane in that direction, in turn inducing a yaw angle. It is the effects of the yaw angle which determine whether the airplane is stable or not.

The airflow coming over the body in a yawed position is obviously fairly complicated. Fortunately, just as we did for velocity vectors on a swept wing, we can break the flow components down into airflow flowing down the centerline of the body, as if there were no yaw, and a smaller crossflow at right angles to the normal direction of flight. While there will be some tendency toward flow separation on the leeward side of the body, this won't be so great as for a pure crossflow, because there is a substantial flow in the fore and aft direction. The following illustration shows how this



crossflow may appear for a circular section fuselage.

For other shapes the general idea still holds up, but the details of the streamlines will be different. The streamlines above the centerline give an upflow like positive dihedral and the streamlines below the centerline give a downflow like negative dihedral. On the leeward side, the situation is reversed

just as in the dihedral case. So both sides contribute to positive stability for a high wing, and both sides contribute to negative stability for a low wing. Consequently, you could get neutral stability on a high wing airplane with some negative dihedral and on a low wing airplane with some positive dihedral. Note that if we had a low wing airplane with just enough dihedral to have neutral lateral stability, then when we inverted it, it would be a high wing airplane with negative dihedral and would still be neutrally stable! So for a neutrally stable, (read pattern airplane), there is an optimum dihedral, which is positive for a low wing airplane, zero for a mid wing and negative for a high wing.

Now it becomes clear that the optimum dihedral is going to be a function of not only whether the wing is high or low but whether the body has a long projecting nose, is circular or square in cross-section (particularly forward of the wing) and how symmetrical it is from top to bottom.

There will also be a strong influence of wing aspect ratio. The higher the aspect ratio, the further away will the wing be from the fuselage's influence. A sailplane's dihedral does not need to vary as much with wing vertical position, while an airplane with a short stubby wing needs lots of dihedral if the wing is low, and possibly negative dihedral (anhedral) if the wing is high.

Continued on the next page



OCTOBER FLOAT FLY PHOTOS

Some examples follow. A good pattern airplane may have zero dihedral with a mid-wing location, but could be equally as effective with a lowered wing with a small amount of dihedral. (The Extra and CAP series come to mind). The Sukhoi 29 with its long circular cross-section fuselage probably needs more dihedral than a shorter coupled, more pointy-nosed airplane. A high-wing aircraft with a swept wing and a long forward fuselage probably needs anhedral so that it wouldn't be too stable in yaw, resulting in Dutch Roll. The Lockheed C-5 and Boeing (was McDonnell Douglas) C-17 are in this category. I believe we've seen examples at the flying field which could be explained by some of the things I've discussed above. Again I'd like to get feedback to see if real life matches the analysis.

Alan Brozen



ANNOUNCEMENT

In early November each club member will receive a packet in the mail that will include:

1. Election Ballot for 2012 officers
2. Reservation form for the annual banquet on December
3. Membership renewal form for 2012

Please note that the dues for 2012 are being increased to \$75.



Early Morning at the Lake



Fog Over the Lake



Gary Sobak Assembling His Cub



Chris Meharg Taking Off



John Midgorden's Seamaster



Working on Mallett's Cub



Randy Bonetti and Stinger



Joe Francis to Maiden Stinger

BIG Ryan Monoplane



*Jim St. John inherited this very large electric powered Ryan.
Note the family resemblance to Lindberg's Spirit of St. Louis*

Coming SAM Events

November

- 1: SAM Board Meeting
- 2: SAM Club Meeting

December

- 3: Toys for Tots Fun Fly
- 3: Annual Banquet at the Landing Zone Restaurant

November 2nd Club Mtg.

Come Early for Dinner at the Landing Zone Restaurant

6:00 P.M.

Club Meeting

7:00 P.M.

November Meeting Program

Alan Brown on



SAM SAYS

FROM:
Salinas Area Modelers
P.O. Box 1225
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MAIL TO: