newsletter of the

SALINAS AREA MODELERS

Volume 28, Issue 1 | Serving the California Central Coast since 1976 | January 2005

Newsletter Contributions:
Salinas Area Modelers, Inc.
P.O. Box 4083
Salinas, CA 93912

Editor and Publisher
Doug Raarup
831/917-4259
s_a_m_news@yahoo.com

The Wrights' less famous "first" flight.

—Kraz— (c) '03

Inside this Issue:

President Says . . .

Jim "Crash" St John
Welcome aboard our new President!

Well, here we start a new year with a new face in the president's chair. I've been in the club for 20+ years, many of those years in different offices, except this one. I've been in charge of many club events, especially the annual auctions we use to have in March. Now, with the help of all the club members, we shall start a new year of history for the Salinas Area Modelers.

I want to open by asking for your help. We have 50+ members but only 8-10 attend meetings. Tell me WHY you don't come. If it's because of lack of Show & Tell, because no raffle, because the location and/or day of meetings, what ever the reason PLEASE let me know so we can work on it. If there are enough of you wanting a different location/day to meet, we can work on that. If enough want a raffle back, again we will work on it. This is your club just as much as the next guy's, so we need to hear from all of you willing to be heard.

By the time you read this, I will have reserved our club event dates at the scheduling meeting on 12/18/04 to hopefully avoid a conflict as we had for the IMAA event in Sept of this year. Our posted events will be the Bob Francis Memorial Fun-Fly in April, the Memorial Fun-Fly in July, the Electric Fly-In in October and the Toys-for-Tots in December. We will have Float Flies, Glider Flies, Tail Gate Bar-B-Ques, and A LOT of FUN at all the events!

At the January meeting we need to further discuss the Memorial Fund that we need to set up for the funds that Cindy Miller is donating to the club. We will discuss the Ruddergates and other club events. We will have an update on the status of the student flight training program. And we will have a show and tell to share with all. So PLEASE come join us on January 5th at the Salinas Recreation Center at 7:30pm. I will bring Coffee and cookies for all, just come eat them so I don't eat them all myself.

Happy Landings!

Jim "CRASH" St. John

Minutes of the 2004 Annual SAM Meeting

The 2004 Annual Meeting of the Salinas Area Modelers was held at the Landing Zone Restaurant located at the Salinas Memorial Airport. James and Helen Klimas, owners of the restaurant, provided a very tasty sit down dinner.

After short introductory comments by John Midgorden, President, the results of the election were announced. The following officers were elected for 2005:

President:	Jim St. John
Vice-President	Bob Dooley
Secretary:	John Midgorden
Treasure	Bob McGregor
Board Members:	Malcolm Beety
	Dale Oxford
	Dave Stoik

(In addition it should be noted that Bob Dooley will continue as the club's webmaster and Doug Raarup as newsletter editor.)

John Midgorden then presented a Keynote presentation highlighting the club's 2004 activities. The traditional white elephant gift exchange was orchestrated by Jack Jella.

Respectfully submitted,
John Midgorden, Secretary

TOYS-FOR-TOTS.... Christmas 2004

For a lot of years, SAM has been sponsoring a Christmas Fun-Fly to collect toys for the children of needy families. In the early years the toys were donated to the Salvation Army or Salinas Fire Department for distribution. But five or six years ago, realizing that a real need exists in the Chualar area, it was decided to make our contribution directly to the Chualar Rural Fire Department Station, for the children of low income families that reside in the area. Since the location of our flying field makes us part of the Chualar community, I like to think that we are just being good neighbors. I want to thank all that donated toys or cash to this years event, your generosity made a lot of children very happy on Christmas morning.

Jack Jellá

Aerodynamics 101

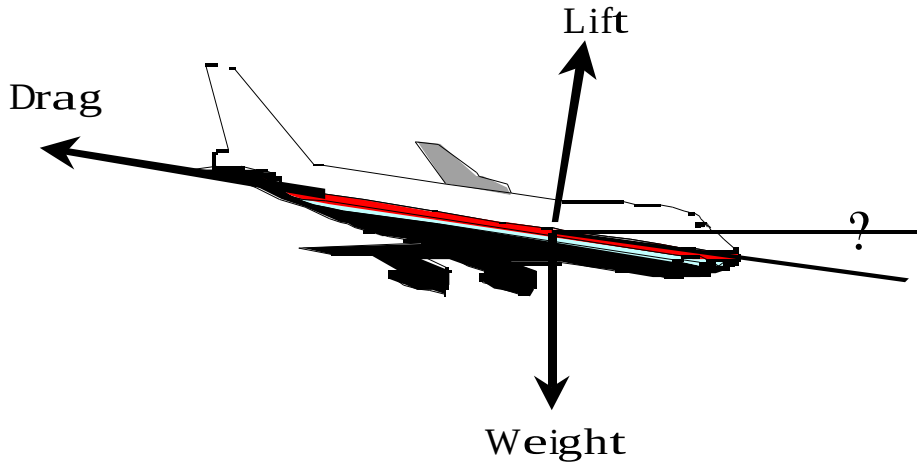
I thought I'd resurrect some of the articles I wrote some time ago on the grounds that we have a number of newer members who won't have seen them before, and a number of older members who have probably forgotten all about them. So here goes. . .

Some time ago in an article by Chuck Cunningham, he asked "Why did I design the original Lazy Ace with a wide blunt nose and an upswept forward fuselage section - - - ?" and continues " - - - the blunt nose acts like a big air brake out in front of the fuselage - - -. The more streamlined the front of the fuselage, the faster the landing speed. Second, the upswept front of the fuselage acts somewhat like a space capsule with the large end striking the atmosphere first and acting as a buffer all the way down to landing. In normal flight, it acts as a lifting airfoil, adding a bit more overall lift to the aircraft."

The first thing that hit me was "The more streamlined, the faster the landing speed." Well, this just isn't true for a normal power-on landing. The principal determinant of landing speed is wing lift coefficient.

The equation is: *Lift = 1/2 Cl x (air density) x S x V2*
where lift = aircraft weight, W, for a 1g approach, Cl is the lift coefficient, S is the effective wing area and V is the airplane velocity. Lift coefficient increases with wing incidence, and maximum practical lift coefficient (just below the stall) is a function of airfoil camber. Flat-bottomed airfoils are somewhat better than symmetric airfoils and heavily cambered airfoils and airfoils with flaps are better yet. So to get the landing speed down we should increase lift coefficient, air density or effective wing area or reduce the airplane weight. If we divide both sides of the equation by S, the wing area, the left hand side becomes W/S which is wing loading. So landing speed is proportional to the square root of wing loading divided by the lift coefficient.

So what happened to drag? The answer is made obvious when we look at a dead stick landing. In this case there are only three forces acting on the airplane, lift, drag and weight. They form a triangle which has to balance.



With power on in level flight, drag is balanced in a fore and aft direction by thrust, and weight is balanced vertically by lift. However, with the power off, the only way everything balances is by the airplane flying downhill! The lift is still at right angles to the flight path, the drag is still along the flight path, and the weight is still acting vertically, independent of the flight path. If the glide angle is alpha, then the balancing equations are: along the flight path, drag = weight x sine (alpha), and at right angles to the flight path, lift = weight x cosine (alpha). Dividing one equation by the other, we get lift/drag = 1/tangent (alpha). For small glide angles, which go with typically high lift/drag ratios, tangent (alpha) approximately equals alpha, so the drag/lift ratio is about equal to the glide angle (in radians, not degrees). Note something interesting. Lift now is a bit less than the weight of the airplane because cosine alpha is always less than one. The drag is doing its share in holding up the weight of the airplane, but only to a very small extent. Not only is it (hopefully!) much less than lift, but it's acting in an almost horizontal direction.

Now let's look at some numbers. A reasonably good model monoplane may have a lift/drag ratio of about 12, giving a glide angle of almost 5 degrees. Cosine of the angle is 0.9965, so the lift will be a whole 0.35% less than it is in level flight. The velocity will be 0.17% less than for level flight at the same lift coefficient. If the airplane normally lands at 30 mph in level flight, it will now land at 29.95 mph dead stick. If we double the drag (which is fairly hard to do), the glide angle goes up to 9 1/2 degrees and the landing speed drops all the way to 29.85 mph, a change of 0.1 mph. Now there may be some club members who could pick up these differences, but I am sure not one of them! However, the vertical component of the landing speed goes almost directly with the drag. In this case, the sink speed changes from 2.5 mph for an L/D of 12 to 4.9 mph for an L/D of 6. Well, sorry, Chuck, but I think I'd rather not have the extra drag for landing.

Now although drag does not affect the minimum landing speed, it does affect deceleration. So if I start off with an initially high speed, the draggier airplane will get down to a slow landing speed more quickly, which clearly can be an advantage. So it's possible that that was what Chuck had in mind. That's certainly a good point. The answer is, of course, that if you have a very low-drag aircraft, get down to your landing speed on the downwind leg. Don't wait until you are crossing the end of the runway.

Now what about the lifting airfoil effect of the blunt nose? Well, that of course is a valid effect, except that the majority of lift on a lifting body comes from suction over the top forward surface, and much less comes from positive pressure from below. The other thing that you have to think about is that the lift is being generated well forward of the c.g. and is therefore destabilizing. This calls for a larger tail to compensate.

In fact, an interesting phenomenon about lifting bodies can be demonstrated by a simple tubular balloon tied onto a stick by its knotted end. Hold the balloon into the wind and it will oscillate back and forth or whirl in a cone-shaped manner, where the deviation from straight ahead is about 20 degrees. It does this because at small angles of incidence it develops positive lift from the hemispheric

Aerodynamics 101 continued

front end and negative lift from the hemispheric back end. The resultant center of pressure is about 1/4 to a 1/2 of a body length ahead of the nose of the balloon, depending on how well the flow stays attached at the back end. However, as the angle of incidence increases, the center of pressure moves aft. (Obviously, when the angle of incidence is 90 degrees and the balloon is at right angles to the wind, the center of pressure is half way out along the balloon). At about 20 degrees, the center of pressure moves behind the nose, which is stabilizing, and the balloon blows back to 20 degrees on the other side.

So overall, more drag doesn't really affect the landing speed but does proportionally increase the sink rate. Increased lift from the nose will add to overall airplane lift, thus decreasing landing speed a little. But it will be destabilizing. Because of the aft movement of center of pressure with angle of incidence, the airplane will gain stability as the angle of attack is increased, although I would expect this effect to be quite small, because the extra lift generally won't be very large.

Editor's note: This article is the first of a series to be published on a periodic basis. It was written by SAM member Alan Brown. His background is that he was the chief engineer and program manager of the F-117A Stealth Fighter while he worked for the Lockheed Skunk Works.

The Correct Use of Tools

Most people who work with tools know that all tools have 2 uses; the one it was designed for, and the one it is used for. The following list demonstrates some of the latter uses of tools.

HAMMER: Originally employed as a weapon of war, the hammer nowadays is used as a kind of divining rod to locate expensive parts not far from the object we are trying to hit.

PLIERS: Used to round off bolt heads.

DRILL PRESS: A tall upright machine useful for suddenly snatching flat metal bar stock out of your hands so that it smacks you in the chest and flings your beer across the room, splattering it against that freshly painted part you were drying.

WIRE WHEEL: Cleans rust off old bolts and then throws them somewhere under the workbench with the speed of light. Also removes fingerprint whorls and hard-earned guitar callouses in about the time it takes you to say, "Ouc...."

PHILLIPS SCREWDRIVER: Normally used to stab the lids of old-style paper-and-tin oil cans and splash oil on your shirt; can also be used, as the name implies, to round off Phillips screw heads.

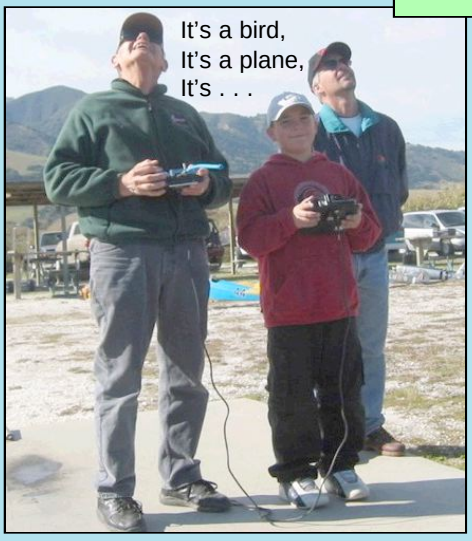
HOSE CUTTER: A tool used to cut hoses 1/2 inch too short.

2004 Annual dinner

Warbirds

Russian Plane.....
Russian Hat!

2004 Toys for Tots Fun Fly



It's a bird,
It's a plane,
It's . . .

Please buy John some new gloves!

Nice Jackets!

Officers

President: John Midgorden 633-4026
Vice Pres: Dave Florence 678-1334
Secretary: Dick Moeller 663-2613
Treasurer: Bob McGregor 422-3049

Board of Governors

Malcolm Beety 393-9304
Dale Oxford 663-5066
Jim St.John 759-9551

Field Maintenance

Malcolm Bruce 449-4471
Malcolm Beety 393-9304

Club Internet Site:
http://www.redshift.com/~modeler
Webmaster: Bob Dooley 393-0664

Next Club Meetings

Wednesday, Jan. 5, 2005
Wednesday, Feb. 2, 2005
7:30 pm
Salinas Recreation Center
320 Lincoln Ave.
Salinas, CA

Club meets on the first Wednesday of each month (except December)

Send in your articles and pictures now!

Salinas Area Modelers
P.O.Box 4083
Salinas, CA 93912